

METAL PATINATION ON YOUR TURNINGS • MAKE A LATHE ROUTER JIG

# Woodturning

THE WORLD'S LEADING

MAGAZINE FOR WOODTURNERS

Drilling pen blanks  
and how to avoid  
common problems

**PROBLEM SOLVING**  
Richard Findley looks at the  
issues surrounding workholding

## PROJECTS TO MAKE

- Shamel ash bowl
- 3 turned vessel designs  
for you to make

Tips for making a  
laminated fir ball

Developing supports  
for your turnings

**In profile** we meet  
professional turner  
and AWGB chairman  
Andy Coates



## SC3 Geared Scroll Chuck Package



### Includes:

- SC3** Geared Scroll Chuck (Thread options below)  
**62313** 50 mm Jaw Set  
**JS25N** 25 mm Jaw Set  
**6025** Mini Step Jaw Set  
**10006** Woodworm Screw  
**61016** Pinion Key

### Thread Options:

- 61004** 3/4" x 16 TPI  
**61002** 1" x 8 TPI  
**61005** M33 x 3.5

## SC4 Professional Geared Scroll Chuck Package



### Includes:

- SC4** Professional Geared Scroll Chuck  
**62313** 50 mm Standard Jaw Set  
**JSPIN** Pin Jaw Set  
**62833** Standard Woodworm Screw  
**3326** 8 mm Ball Hex Key  
**62825** Universal Spanner  
Chuck Insert (See website for full range of inserts)

## New Woodturning Chuck Jaw Range

As part of the design process involved in creating this brand new range, we looked in depth at the ranges of jaws available to today's woodturners. Our aim was to create a new range which allowed for all the flexibility currently on offer whilst also engineering out superfluous features and, where possible, condensing the attributes of some jaw designs to increase their usefulness. The result is a comprehensive range of 14 intelligently designed

sets of chuck jaws, some of which are brand new designs exclusive to Record Power.

This range offers woodturners a definitive collection of jaws to cover virtually any woodturning task and represents unbeatable value for money.



**62321** 35 mm Standard Jaws  
**£34.99**



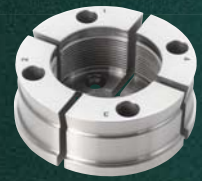
**62313** 50 mm Standard Jaws  
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**62329** 100 mm Dovetail and Deep Gripper Jaws  
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**62317** 130 mm Dovetail Jaws  
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**62322** 75 mm Heavy Bowl and Gripper Jaws  
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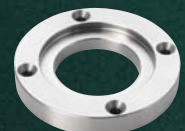
**62327** Pin Jaws with 9 mm Bore  
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**62336** Mini Spigot Jaws with 13 mm Bore  
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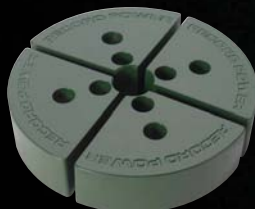
**62337** Pen Jaws **£29.99**



**62572** 2 Inch (50 mm) Faceplate Ring  
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**62356** Remounting Jaws Mini - Up to 200 mm Bowl  
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**62376** Remounting Jaws Mega - Up to 295 mm Bowl  
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Prices valid until 31.08.2015. E&OE.



For full details of the brand new range of chucks and jaws please visit the Record Power website or request your free copy of the Spring / Summer 2015 promotional catalogue.





# Introducing the Brand New Range of Woodturning Chucks and Jaws

We are extremely proud to introduce the brand new range of Record Power woodturning chucks and jaws. This exclusive new range has been developed using Record Power's extensive experience and knowledge of woodturning in conjunction with a group of highly experienced professional and hobby woodturners, to bring

you the ultimate in quality, versatility and value. Incorporating the best elements of our previous ranges, we have also listened closely to our valued customers over the years and have taken note of their feedback, suggestions and requests to guide our design approach.



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Super Geared True-Lock™ technology ensures high levels of accuracy to provide smooth and solid operation.



**Jaw Fixing System**  
The SC3 and SC4 feature a jaw fixing which will not only fit the Record Power series of Jaws but is also fully compatible with Nova and Robert Sorby brand jaws.



**Heavy Duty Jaw Slides**  
The improved and enlarged jaw slides give unsurpassed holding power and load bearing ability. They are made from high tensile steel, reinforced with nickel and copper and heat-treated to ensure superior strength.



**Sealed Backing Plate with Full Indexing**  
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**Sweet  
16**

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# Get making something



PHOTOGRAPH BY GMC/CANTHON/BAILEY

Working on a new project in the GMC workshop

The workshop is, as we know, a personal space. The workshop – whatever and wherever that space may be – is where we can escape to, our refuge from the hustle and bustle of everyday life where we can do our own thing and hopefully be creative, although that isn't always the case. My friend has fitted his out with an audio-visual setup, which is better than the one in his house. By his own admission, he is more likely to be in there watching TV, DVDs or listening to music than making anything in his well-equipped workshop. I guess this is what people call a man cave! Is all that equipment going to waste, or, is he waiting for that flash of inspiration to get him back to making? The equipment is still lovingly cared for, but other than a bit of DIY – fitting some skirting and painting in the house – he hasn't used

any of the workshop kit, lathe, bandsaw and suchlike for the last eight months.

I chuckle about this as it is something I cannot do. Even if I can't get in the workshop to do the things I want to, I try to get in there to do some of the things I need to. Unless I am on holiday or fishing – although not so much of either of those recently – I get irritable and frustrated about lack of workshop time, but I have to accept that it seems I fit in more time in the workshop than many of the people I see out and about at events recently.

One of the phrases I have often used this year is: 'Get making something'. I don't care what people want to make, just do it! Find the time and do it, even if it means learning new skills. I don't care what you make, it is another skill you are learning, exercises

the brain and is fun too. Woodturning is fascinating and I do everything I can to encourage people to try it and do it, but I have to accept the reality that the lathe is nothing more than another tool to help us get from A to B. The world does not stop spinning if a lathe is not used. If you do use a lathe – and if you are reading this magazine it is likely that you are interested in or are already involved in woodturning – the use of the lathe is brilliant and so much fun. But, for some, it might not be the right route for them or form but a small part of what they use. I don't care, no excuses, artificial barriers, no being persuaded or put off by others, just get making something. You will have so much fun.

Best wishes, Mark

markb@thegmcgroup.com



Woodworkers Institute website ([www.woodworkersinstitute.com](http://www.woodworkersinstitute.com)) is thriving. It would be great if you took a look and participated in the various discussions and competitions in our community, or see us on Facebook & Twitter.





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## NEWS, LATEST PRODUCTS, MAGAZINE UPLOADS & EVENTS

can all be found on [www.woodworkersinstitute.com](http://www.woodworkersinstitute.com). These all appear on the magazine homepage and you can see a bigger selection by scrolling down the page and clicking on the individual stories. We also have an extensive online archive for you to browse

## Subscribers!

Turn to page 44 for subscription special offers and you could save 30%!



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A mixture of press releases and reviews showing the latest tools and products on the market. All prices include VAT, and are correct at time of going to press



Conversion chart	
2mm	( <sup>5</sup> / <sub>16</sub> in)
3mm	( <sup>1</sup> / <sub>8</sub> in)
4mm	( <sup>1</sup> / <sub>4</sub> in)
6mm	( <sup>1</sup> / <sub>2</sub> in)
7mm	( <sup>7</sup> / <sub>16</sub> in)
8mm	( <sup>5</sup> / <sub>16</sub> in)
9mm	( <sup>11</sup> / <sub>32</sub> in)
10mm	( <sup>3</sup> / <sub>8</sub> in)
11mm	( <sup>7</sup> / <sub>16</sub> in)
12mm	( <sup>1</sup> / <sub>2</sub> in)
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15mm	( <sup>9</sup> / <sub>16</sub> in)
16mm	( <sup>5</sup> / <sub>8</sub> in)
17mm	( <sup>11</sup> / <sub>16</sub> in)
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19mm	( <sup>3</sup> / <sub>4</sub> in)
20mm	( <sup>3</sup> / <sub>4</sub> in)
21mm	( <sup>13</sup> / <sub>16</sub> in)
22mm	( <sup>7</sup> / <sub>8</sub> in)
23mm	( <sup>23</sup> / <sub>32</sub> in)
24mm	( <sup>15</sup> / <sub>16</sub> in)
25mm	(1in)
30mm	(1 <sup>1</sup> / <sub>8</sub> in)
32mm	(1 <sup>1</sup> / <sub>4</sub> in)
35mm	(1 <sup>3</sup> / <sub>8</sub> in)
38mm	(1 <sup>1</sup> / <sub>2</sub> in)
40mm	(1 <sup>5</sup> / <sub>8</sub> in)
45mm	(1 <sup>3</sup> / <sub>4</sub> in)
50mm	(2in)
55mm	(2 <sup>1</sup> / <sub>8</sub> -2 <sup>1</sup> / <sub>4</sub> in)
60mm	(2 <sup>3</sup> / <sub>8</sub> in)
63mm	(2 <sup>1</sup> / <sub>2</sub> in)
65mm	(2 <sup>5</sup> / <sub>8</sub> in)
70mm	(2 <sup>3</sup> / <sub>4</sub> in)
75mm	(3in)
80mm	(3 <sup>1</sup> / <sub>8</sub> in)
85mm	(3 <sup>1</sup> / <sub>4</sub> in)
90mm	(3 <sup>1</sup> / <sub>2</sub> in)
93mm	(3 <sup>5</sup> / <sub>8</sub> in)
95mm	(3 <sup>3</sup> / <sub>4</sub> in)
100mm	(4in)
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110mm	(4 <sup>1</sup> / <sub>4</sub> -4 <sup>3</sup> / <sub>8</sub> in)
115mm	(4 <sup>1</sup> / <sub>2</sub> in)
120mm	(4 <sup>3</sup> / <sub>4</sub> in)
125mm	(5in)
130mm	(5 <sup>1</sup> / <sub>8</sub> in)
135mm	(5 <sup>1</sup> / <sub>4</sub> in)
140mm	(5 <sup>1</sup> / <sub>2</sub> in)
145mm	(5 <sup>3</sup> / <sub>4</sub> in)
150mm	(6in)
155mm	(6 <sup>1</sup> / <sub>8</sub> in)
160mm	(6 <sup>1</sup> / <sub>4</sub> in)
165mm	(6 <sup>1</sup> / <sub>2</sub> in)
170mm	(6 <sup>3</sup> / <sub>4</sub> in)
178mm	(6 <sup>7</sup> / <sub>8</sub> in)
180mm	(7in)
185mm	(7 <sup>1</sup> / <sub>4</sub> in)
190mm	(7 <sup>1</sup> / <sub>2</sub> in)
195mm	(7 <sup>3</sup> / <sub>4</sub> in)
200mm	(8in)
305mm	(12in)
405mm	(16in)
510mm	(20in)
610mm	(24in)
710mm	(28in)
815mm	(32in)
915mm	(36in)
1015mm	(40in)
1120mm	(44in)
1220mm	(48in)
1320mm	(52in)
1420mm	(56in)
1525mm	(60in)

HEALTH AND SAFETY

Woodturning is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines. All readers should observe current safety legislation.



## New Products and Patriot Chuck Special Offer

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# Round & about

We bring you the latest news from the world of woodturning as well as letters from the Woodworkers Institute forum and important dates for your diary from the woodturning community

## Pen Manufacture Enterprise Teacher's Guide

The American Association of Woodturners (AAW) is pleased to introduce the newest addition to its Turning to the Future teaching resources entitled, *Pen Manufacture Enterprise Teacher's Guide*. The 28-page booklet provides a framework for instructors to teach a complete unit on industry and free enterprise through woodturning and pen-making.

### Kip Christensen

The publication was written by Kip Christensen, PhD, a professor in the School of Technology at Brigham Young University in Provo, Utah. His primary teaching areas include wood prototyping, furniture design, manufacturing and supervising student teachers in technology and engineering education. Kip is also a well-known woodturner and has co-authored three books and co-produced eight instructional DVDs about woodturning. A longtime member of the AAW, he was mentored by 1993 Honorary Lifetime Member, Dale Nish. Kip has written numerous articles on woodworking and technology education, which have been published in magazines and journals worldwide. He has a special interest in woodturning education and is often involved in instructing teachers how to help others learn to turn wood on a lathe.

Pen Manufacture Enterprise was adapted from a unit Kip teaches as part of a technology



AAW chapter, the Tennessee Association of Woodturners, teaching pen-making to students of the Narrow Gate Foundation

education course in manufacturing materials and processes. The guide groups students into 'manufacturing companies'. They name their companies, establish individual and group responsibilities, design, mass-produce and sell a product. The unit may be expanded to include design and problem-solving elements. For example, creating distinctive designs or fabricating specialised jigs and fixtures for mass production. Students may also be exposed to real-world free enterprise through development of marketing surveys, packaging design and sale of the product.

### Pen-making process

Pen-making can truly be a win-win proposition. It's popular among students because pens are useful and fun to turn. Teachers like teaching pen-making because it is an inexpensive activity that gives students a variety of meaningful educational experiences in a short period of time. Pen-making allows students to learn with their hands, operate machines, including a bandsaw, sander, drill press, lathe, power hand drill and complete processes, such as cutting, sanding, drilling, turning, and finishing.

The process of learning with the hands can be a much needed departure from today's digital devices, as well as an effective approach to inspiring life balance for youth. Hands-on, experiential learning is engaging,



requires that students be mindfully present and can have a beneficial effect on individual wellbeing. Learning with the hands and mastering a creative skill step-by-step, teaches important life lessons that can't be taught with a book or computer. Learning and creating can be enriching and sometimes even transformational.

The guide is available as a free digital download for AAW members and is available to non-members for \$29.95 (£19.80) at <http://tinyurl.com/PenManuf>. If you are not a member, but are a certified teacher who provides hands-on instructional turning sessions to students aged from 10-25, you may apply for a scholarship to cover the cost of your AAW membership and participation in the Turning to the Future programme at <http://tinyurl.com/PenManuf2>.

**Contact:** AAW

**Tel:** (001) 877 595 9094

**Web:** [www.woodturner.org](http://www.woodturner.org)



Kip Christensen



# Giles Gilson: 1942–2015

The woodturning community has lost a legend – quite possibly the most original and certainly the most brilliantly eccentric artist in its history. Within an hour of beginning work on a documentary for the American Association of Woodturners on this pioneering artist, I received an email from his close friend David Ellsworth to say that he was gone. The footage is on my hard drive, so I'm moving ahead and for the next few months I'll be 'hanging out with Giles' while I edit the hours of footage of him talking and working and playing his sax and flying a biplane.

I was aware of his work, but my first experience with Giles was in 1991, when I began working as manager at del Mano Gallery. They had sent out invitations to their annual 'Turned Wood' exhibition, asking artists to return postcards if they were interested in participating – this being back in those dark days before we all had email. I was told that I had to follow up with Giles, as he had not returned his postcard and it was important that he participate in the exhibition. I had a sense that I was being setup – that it was one of those 'let the new guy who doesn't know any better handle it' situations – but it was my job, so I gave him a call.

"Oh, yeah, I remember seeing some paperwork about that around here somewhere," Giles told me. I explained that I just needed a verbal 'yes' as we were working on advertising and he said: "I have a couple of questions about the exhibition. First, does the work need to be turned?" I told him that, as it was a 'Turned Wood' exhibition, there was an expectation that the work was at least partially turned. "Does it have to be wood?" he asked. I told him that, as it was a 'Turned Wood' exhibition, there was an expectation that the work be made of wood. "I'll see what I can do," he told me and the work that came for the exhibition was indeed turned wood, though the majority of collectors didn't know what to make of it. Not only did Giles tend to paint over the wood – with acrylic and layers

of transparent lacquer – but the works often featured bold colours and the sort of pin striping that was normally associated with hot rod cars.

At one point, we convinced him to have a one-person exhibition, as we were always telling collectors that they should have a work by Giles, even if they didn't understand it and we felt having a large selection of work would assist in promoting him. When the work arrived it was not turned and, stranger yet, the complex wood structures were hidden behind aircraft grade polyester and paint. He'd used processes for creating small aircraft, rather than woodturning and the collectors were left scratching their heads all the more.

I'm going to miss this possibly saner than the rest of us crazy artist, who told me two decades ago, that the work of an artist is not concerned with how it's made, or what it's made of, but whether or not it captures what it is to incarnate as a human on this planet at this point in history.

Kevin Wallace



PHOTOGRAPHS COURTESY OF KEVIN WALLACE

'Incident at the Crossroads', by Giles Gilson



'Twelve Cycle Bowl', by Giles Gilson

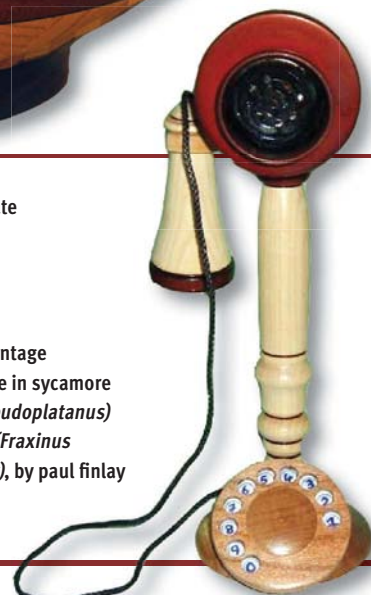


Spalted beech (*Fagus sylvatica*) bowl, 255 x 100mm, by dunkhooper

'Treasures from the deep', apple (*Malus sylvestris*) on a slate base with natural cultured pearls, 25mm long, by bodrighy



Turned vintage telephone in sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*), by paul finlay





# The ToolPost's open house events

The ToolPost has two Open House events taking place this year: the first is the Spring Open House, which takes place from 6–7 June and the Autumn Open House, which takes place from 7–8 November. Both events occur over a Saturday and a Sunday, making them more accessible for all not to mention easier parking, less congestion for visitors travelling and gives everyone – working or privileged – the opportunity to attend.

The demonstrator line-up for each of the events has now been confirmed and you can expect to see a real diversity of woodturning talent from around the globe. Demonstrating at the Spring event will be Ronald Kanne from the Netherlands and Manfred Gangl from Austria. At the Autumn Open House will be Jason Breach and another turner,

who is yet to be named, so watch this space!

Both events promise to be a great day out for all and you can also take the opportunity to peruse The ToolPost's extensive shop, which is described as an 'Aladdin's Cave' of woodturning, woodcarving and general woodworking tools, accessories and much more. Don't miss out on these great events – you can find out more information by visiting the website – [www.toolpost.co.uk](http://www.toolpost.co.uk). Keep checking back for updates.

**When:** Spring Open House:

6–7 June, 2015; Autumn Open

**House:** 7–8 November, 2015

**Where:** The ToolPost, 7 Hawksworth, Didcot, Oxfordshire OX11 7HR

**Contact:** Peter Hemsley

**Tel:** 01235 511 101

**Web:** [www.toolpost.co.uk](http://www.toolpost.co.uk)



Andrew Hall's hat-making demo at last November's Autumn Open House

## Line-up announced for Yandles Spring Show

Yandles is pleased to announce the line-up of demonstrators for its forthcoming show on Friday 10 and Saturday 11 April, 2015. The organisers are very glad to be able to say that Mick Hanbury, Tracy Owen and Mary Ashton will be among the woodturners appearing, alongside Rod Page and Keith Fenton. This year, you can also see Gary Orange demonstrating chainsaw carving, Loxtonwood Craft demonstrating side axe and adze planking, Lyme Regis boatbuilders showing off their skills and the Japanese Tool Group will once again be demonstrating along with Ben Crowe and his guitar making. As always, there will be an

excellent display of stick making, marquetry and woodcarving, plus furniture restoration and chairmaking alongside displays from Exeter Woodcarvers, West Country Woodcarvers and Martock Woodturners.

The show is now one of Britain's longest running woodworking shows and attracts thousands of visitors from all over the UK and Europe. Taking place in a traditional sawmill, which was founded over 150 years ago, makes the show unique and as you would imagine from a timber company, offers the best selections of timber to be found at a UK-based woodworking show. Joining the demonstrators will be many of

the woodworking industry's manufacturers, all of whom will be demonstrating their products and offering special show prices.

All timber from Yandles' self-selection centre will be discounted, there will be lots of show bargains, a sale in the Hobby shop, plus refreshment marquee and the 303 Gallery. There is free entry and parking to the show.

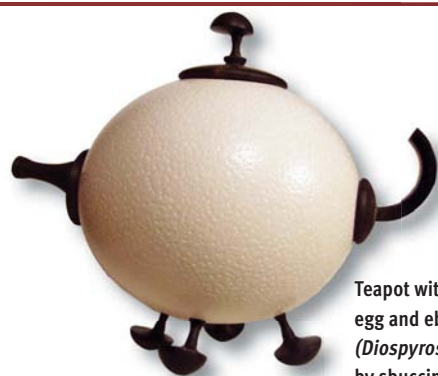
**When:** 10–11 April, 2015

**Where:** Yandle & Sons Ltd, Hurst Works, Martock, Somerset TA12 6JU

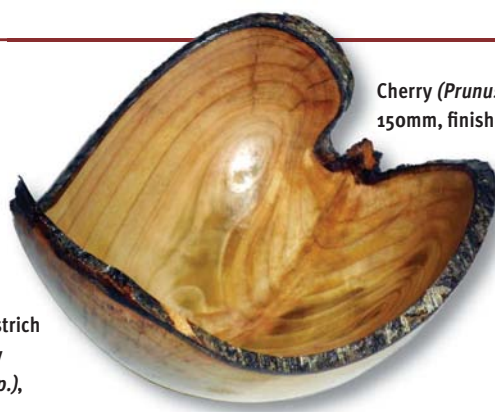
**Contact:** Yandle & Sons Ltd

**Tel:** 01935 822 207

**Web:** [www.yandles.co.uk](http://www.yandles.co.uk)



Teapot with ostrich egg and ebony (*Diospyros spp.*), by sbuccino



Cherry (*Prunus spp.*) bowl by mark.a, 150mm, finished with Danish oil



Vase in ash (*Fraxinus excelsior*) and walnut (*Juglans regia*), 230mm high, by CHJ



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# Workholding issues

Richard Findley continues his problem solving series, this month looking at the issues surrounding workholding

## RICHARD FINDLEY



Richard is a registered UK professional woodturner living and working in Leicestershire. He discovered woodturning while working for his father as a joiner. Richard makes all kinds of work to commission, from replacement antique components, walking canes and stair spindles, to decorative bowls. It is the variety of work that he loves. He also offers demonstrations and a range of woodturning supplies.

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Everything we make has to be held on the lathe at some point, but not only does it need to be held, it also needs to be held securely. Some items are easier to hold than others, some projects need mounting in a number of different ways, sometimes several times during the turning process and some need special mountings made for them. Whatever the situation, there is little more frustrating or dangerous to the turner than

work that repeatedly parts company with the lathe. In this article, I intend to address the common problems people have with securely holding work on the lathe.

## The problem

There are a number of common issues encountered that relate to workholding. These include:

- The wide array of chucking products
- Work running true
- Holding work securely
- Removing work from the chuck, then trying to remount it again
- Remounting work to remove original chucking marks
- Holding strange shapes

## A familiar story

A beginner has done some spindle work with the four-prong drive and live centre that came with the lathe and now wants to try their hand at bowl work. Every piece of information the turner can find suggests a chuck is what is needed, but an internet

search soon shows this isn't going to be as straightforward as was first thought. The beginner assumed there would be one chuck, with one set of jaws and they'd be ready to go, but a look at their normal supplier brings up a mind-boggling choice of three chuck bodies and around 20 different sets of jaws!

Finally, a chuck and jaw set are chosen and our beginner is ready to turn a bowl. A recess or spigot is cut, apparently as per the instructions given, but when held in the jaws the bowl wobbles, and after much swearing and some persuasion with a hammer, the bowl is running true-ish. The moment the bowl gouge touches the spinning timber it leaps from the chuck, bouncing across the workshop and scaring the turner half to death!

Eventually, the bowl is nearly finished. The turner takes it from the chuck to admire their handiwork, but decides it needs a little more work, so tries to remount it. No matter how they try, it will not run true. The final step is to remove the rather scarred chuck holding area at the bottom, just as all the demonstrators at the club say that you must...

Sound familiar? So what are the solutions?



## Chuck choice

There are so many chucks on the market that it is hard to offer guidance. My best advice would be to stick to a well respected manufacturer that offers a good selection of jaw options. If you are in a club or a member of an online forum, ask advice and see what others recommend. Better still, go to a tool store or friend's workshop and try out a few chucks and see how they feel and work. Most chucks will be offered with a 'standard' jaw set. These will most likely be suitable for the vast majority of your work, but having the option to buy larger or smaller jaws to fit the chuck is an advantage.

Personally, I have Axminster chucks and find that the standard 'C' jaws will do almost everything I need – I've turned bowls from 70mm to 700mm with them. I also use a set of engineering-type jaws, which I find are very useful for holding all sorts of work, as well as drill bits for boring. I also have a set of plate jaws, which occasionally come in handy for holding odd shapes and sizes, which I will come back to later.

## Initial mounting

The first stage of mounting is to hold the blank or piece of wood, before shaping the outside.

Most lathes are supplied with a faceplate, which is the most basic and arguably most secure method for stage one mounting. Other options include a faceplate ring – which is a machined ring made to fit your chuck jaws, allowing the blank to be mounted without removing the chuck – or a screw chuck, which allows mounting with a single hole – which is good for small work or for certain bowl designs – and also allows mounting with the chuck in place. It is important to make sure you use the correct sized hole to maximise the grip from a screw chuck.

## Spigot or recess?

The second stage of mounting work on a chuck offers the choice of using a spigot or a recess. There are times when one or the other of these options is the obvious choice for design reasons, for example the base of a lamp, where it needs to be hollowed out for the electrical wiring – a recess is a perfect way to hold the base. On a standard bowl, either could potentially be used. Beginners are drawn towards the recess for some reason, but as you progress, you will find that the vast majority of professional and experienced turners will use a spigot.

Why? Both a spigot or a recess will do the

job of holding a bowl perfectly well, as long as they are cleanly cut. The main reason for choosing a spigot over a recess is simply a question of design. With a spigot you have excess timber to work with, which can be reworked or removed entirely at the end of the job and this offers you much more versatility to your designs. With a recess, you are left with a negative space and this needs dealing with in some way. The majority of recesses are also quite large and this leads the design of many early bowls to have a big wide base, which are often disproportionate to the rest of the bowl. Put simply, 9 times out of 10, a spigot will be the best option for bowl work and will help you to produce the most elegant results.

### MYTH BUSTERS:

**Myth – 'A recess will always give superior hold to a spigot or vice-versa'**

I doubt there has ever been a scientific experiment to test either theory. In my experience, both will hold the work equally well, as long as they are cleanly cut to match the chuck jaws

## Cutting the spigot/recess

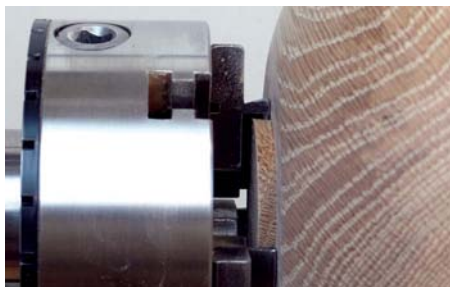
If you cut your mounting properly and cleanly, it will solve a number of the issues described above. The exact tool you use to do this is less important than the end result. Understanding the way in which a chuck holds the work is vital here, because a chuck works in two ways that complement each other. One without the other is of little use:

- **Grip** – the obvious way the jaws hold work is that they grip to stop it coming out of the chuck
- **Support** – mounted properly, the bowl will sit against the face of the jaws as well as being gripped by them; this prevents rock and wobble, both of which lead to the possibility of leverage, which in turn leads to flying bowls!

Because of the importance of how well the bowl seats on the chuck, it is vital that the corners of the spigots or recesses are crisp and clean without unwanted lumps and bumps; the tiniest lump can mean the bowl won't run true or hold securely, so take your time when cutting the spigot or recess and look closely at the result.

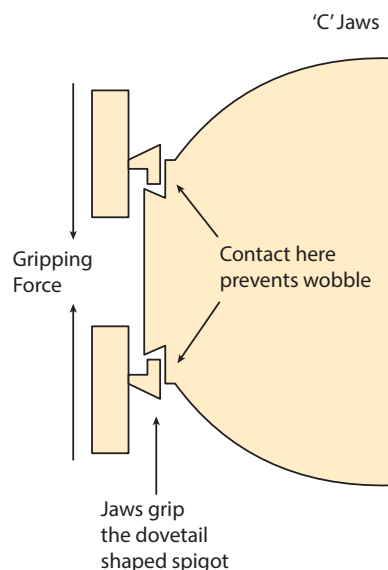


A cleanly cut spigot. The pencil points out how crisp it is, without lumps or bumps, which will easily throw the bowl out of true

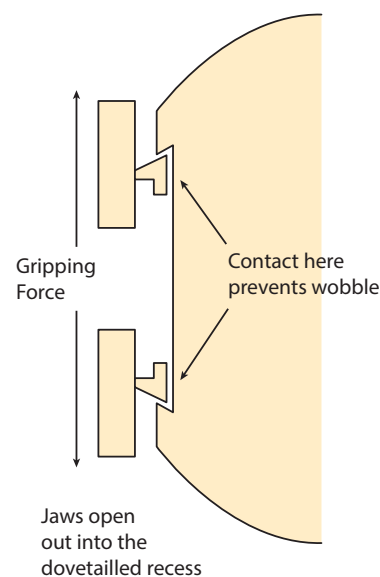


The bowl mounted in the chuck by its spigot. A jaw has been removed to show how the bowl seats properly. Never turn with jaws removed – this is for illustrative purposes only

Spigot



Recess





## Method

There are a number of approaches to cutting spigots and recesses. Some cut with a gouge, claiming the cleaner cut will give the best grip, whereas some use a parting tool. There is even a range of specialist scrapers available to scrape the correct shaped spigot or recess for your chuck jaws. Personally, my preference is to remove the majority of the waste timber with the bowl gouge, then use the skew chisel as a scraper, flat on the toolrest and simply push it into the timber to form the spigot or recess. Whichever tool you use, it must be sharp – as with any turning tool at any time – to get best results.

## Size

Diameter is important, although with modern scroll chucks, there is a lot more leeway than some of the old collet-type chucks. There is a perfect diameter for your jaws to grip, which should be stated in the instructions, but is basically the point when the jaws form a perfect circle. This point gives optimum grip on the spigot/recess. The length of a spigot or depth of a recess is limited only by the depth of the jaws. If a spigot is too long, then the base of the bowl can't seat against the jaws and so wobble can be introduced. If a recess is too deep, it is less of a problem, as the bowl can still seat against the outer surface of the jaws, although this will lead to you producing thicker walled bowls. To begin with, I would recommend using the longest spigot or the deepest recess your jaws can handle; this will give you optimum hold. As your skills improve and catches become more infrequent, the size



Cutting the spigot with a skew, used in scraping mode

of your spigots and recesses can reduce, eventually to just a few millimetres, if required by the design.

### MYTH BUSTERS:

**Myth – ‘You need to apply as much pressure to a chuck key as possible to make sure the work is held securely’**

I know of a couple of professional turners who insist on tightening their chucks until they literally can't tighten them any further, often turning red in the face in the process, sometimes even adding extra levers on to the chuck key to give 'just a bit more'. Most turners, however, agree that chucks should be done up tightly, but you shouldn't have to strain yourself to do so. It is perfectly possible, with too much pressure, to shear off a spigot or split an entire bowl in recess mode



My chuck with 'C' jaws in the optimum position, forming a true circle

## Removing and replacing the work

My suggestion here is simple... don't do it! If you really must, then mark the positions of each jaw and number them to match up with the numbers on the chuck jaws. This allows you to realign the jaw compression marks with the corresponding jaw, which will give you the best chance of the bowl running true. It doesn't always work, though, so don't be surprised if it still doesn't run true. Cutting the spigot or recess properly in the first place will help if you need to remount the work like this. Because wood compresses and moves, the longer the work is out of the chuck, the less chance you will have of getting it back in properly, as the areas compressed by the jaws may well spring back, especially if the moisture content changes. This can happen if you take your piece into a centrally heated house from a cold and slightly damp shed, for example.



The base of the bowl shows I have marked the position of each jaw, to enable accurate remounting

## Remounting a bowl

Having turned a bowl, before it can be considered properly finished the base will need, at the very least, a little tidying up. Naturally, manufacturers have produced a range of chuck jaws and accessories to make this possible, ranging in price from 'expensive' metal plates with rubber holding buttons, to 'incredibly expensive' vacuum

chucking devices. There is another option though that will cost you virtually nothing.

When re-chucking bowls to finish the base, I mount a disc of MDF on a faceplate. Apply a piece of paper towel to protect the bowl from scratches, then simply bring up the live centre to essentially sandwich the bowl between centres and allow the base to be reworked. All that needs to be left is a small nib, which can be carved and sanded away.



Holding the bowl between a live centre and a disc of MDF on a faceplate, to allow the bottom to be reworked and the spigot removed



## ◀ Holding strange shapes

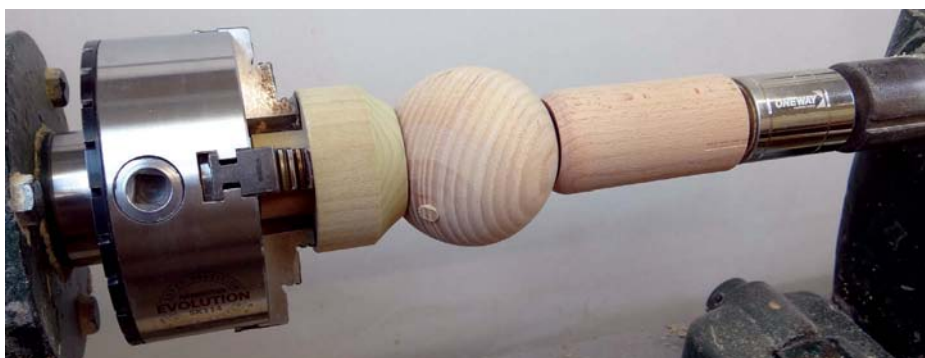
Of course, there is more to turning than making bowls. Spindle work can be driven between a live centre and a drive centre – either a four-prong drive, ring centre or steb centre – but what if there isn't anywhere to locate a centre such as on a tube? Or if you don't want drive marks like on a sphere? In these instances workholding can get interesting!

### Live centre

A piece of equipment I find invaluable is my multi-tip live centre. I currently use a Oneway live centre, which is considered top of the range as far as live centres go and has a price tag to match, but has got me out of all sorts of difficult workholding situations. Today there are a number of clones and alternative versions of this live centre around, so they have become a little more accessible to all wallets. In its usual form it is a ring centre, which is arguably the best all round support for normal spindle work, but notice there is a threaded portion, onto which you can screw a large 60° point, which I mostly use when work with a hole needs driving, such as a tool handle, or if a ring centre isn't appropriate. In the box also comes a larger cone for driving things with an even bigger hole in them, such as a tube or barrel. This large cone can also be reversed and used as a large cup, which can be padded out with paper towel and used to support larger pieces of work like spheres or, as I did recently, a fixed newel finial, while I turned a tenon on the bottom of



My Oneway live centre with a range of different points and tips



Turning a ball using wooden cups mounted in my chuck and on the Oneway live centre

the newel post for a staircase alteration.

The beauty of this threaded part of the live centre, however, is that with a suitable tap, wooden blocks can be threaded to fit

onto the centre, which can then be shaped to fit a particular situation, so an even larger wooden cone could be made or a wooden ball turning cup, for example.

### Driving strange shapes

This is simple really, a block of waste wood held in the chuck can easily be shaped to drive all sorts of work and I have a shelf full of various sized wooden cones and domes which fit my chuck and get used, reshaped and used again for driving some of the random jobs I am asked to do.

Because of the difficulty in remounting work in a chuck, these drive blocks will need recutting for each job to ensure the work runs true.



A selection of wooden drives



Driving a staved tube using tapered wooden blocks

### Jam chucking

Jam chucking is a useful technique for remounting work – for example, when finishing the base of a box. I have often read that jam chucks can be used instead of a chuck if a chuck is out of reach for a beginner. I have always found a certain irony with this suggestion, however. These days, I find a jam chuck pretty straightforward to make, but as a beginner I remember struggling for hours to make them. The trouble is, a beginner without a chuck is unlikely to have the necessary skills to make good jam chucks, or the tool skills

to make light enough cuts on the work to turn with a jam chuck. That said, I once had a student who wanted to turn a box and didn't have a chuck, nor did he have any intention of buying one, so I taught him techniques of turning the entire box using jam chucks, which was an interesting exercise for both of us!

The key elements to making effective jam chucks is to work on a taper and be patient! Attempting to cut a jam chuck the exact diameter first time is a true challenge, even for the most experienced turner, so I would always cut a taper first. With the taper around

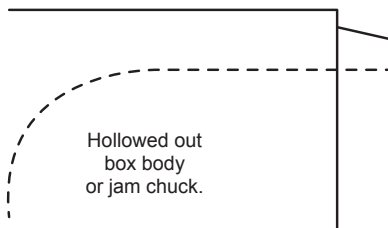
the right diameter, I would begin to level out the tapered surface, always erring on the side of caution and test fitting regularly. Once close to size, I would slightly dome the surface. Test fit, then adjust with the lightest cuts possible, then test fit and repeat. I have found this method very reliable and easy to do without the problems I have experienced with other methods. This method works with both male and female jam chucks, both of which will be required at some point. Female jam chucks are more difficult to make but are quite possible once the technique is mastered.



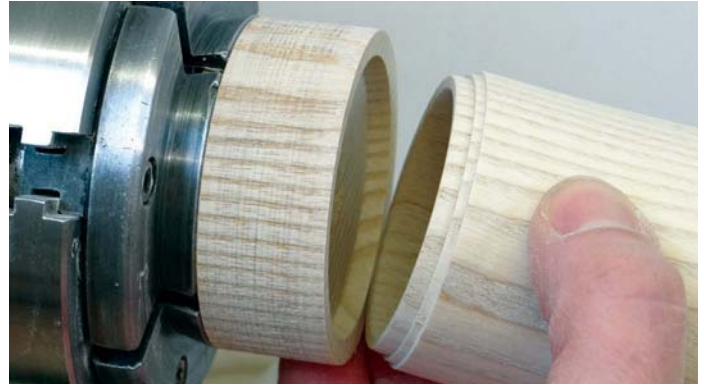


The main stages of fitting a jam chuck: step 1 is a slight taper and test fitting

Step 1  
Cut the taper.



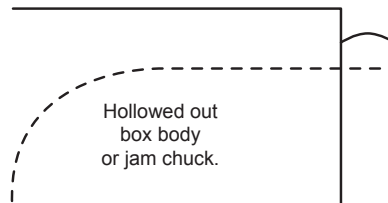
Step 3  
Test fit and adjust, gently flattening the dome shape with light cuts or even sanding to fit



Forming a female jam chuck is a little more difficult but still perfectly possible with this technique

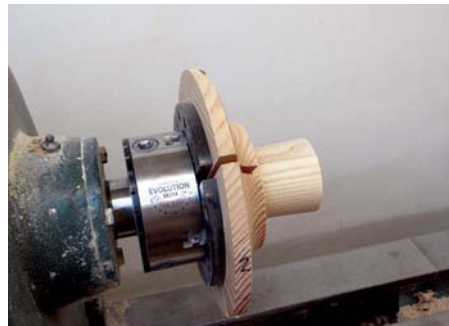
Step 2  
Establish where on the taper the lid fits and remove the excess, forming a slightly domed shape.

Shapes emphasised for clarity.



## Plate jaws

From time to time, a job will come in that can't be held between centres, can't be jam chucked and needs holding in such a way that the chuck jaws won't mark the work. In these instances, I use a set of plate jaws which I have fitted with sacrificial timber. This timber can then be turned to size and can grip items with no danger of damaging them. I don't use them often, but they have got me out of several difficult situations. I have also found that they are useful for a batch of boxes, when each fitting may be very slightly different.



Holding the box with the plate jaws, fitted with sacrificial wooden blocks



A selection of items, turned for this article, using a range of workholding techniques

## TOP TIPS

1. To make life easier when changing jaws, buy a set of carriers for each jaw set; this means you can simply wind out one set of jaws and wind in the next, without having to deal with fiddly little screws which are easily lost in the shavings
2. Always use a soft timber for these custom drive and support blocks, or at least use a softer timber than the main piece of work, to avoid marking it
3. Jam chucks are a great way of holding work, such as boxes, to finish the tops and bases. They do, however, rely on only a relatively small amount of contact to hold them securely so it's always a good idea to bring up the tailstock for some additional support where possible. I have even wrapped masking tape around the join when using the tailstock wasn't possible ●



Even when your jam chuck is good and tight, it is a good idea to bring up the tailstock for some additional support – just in case!



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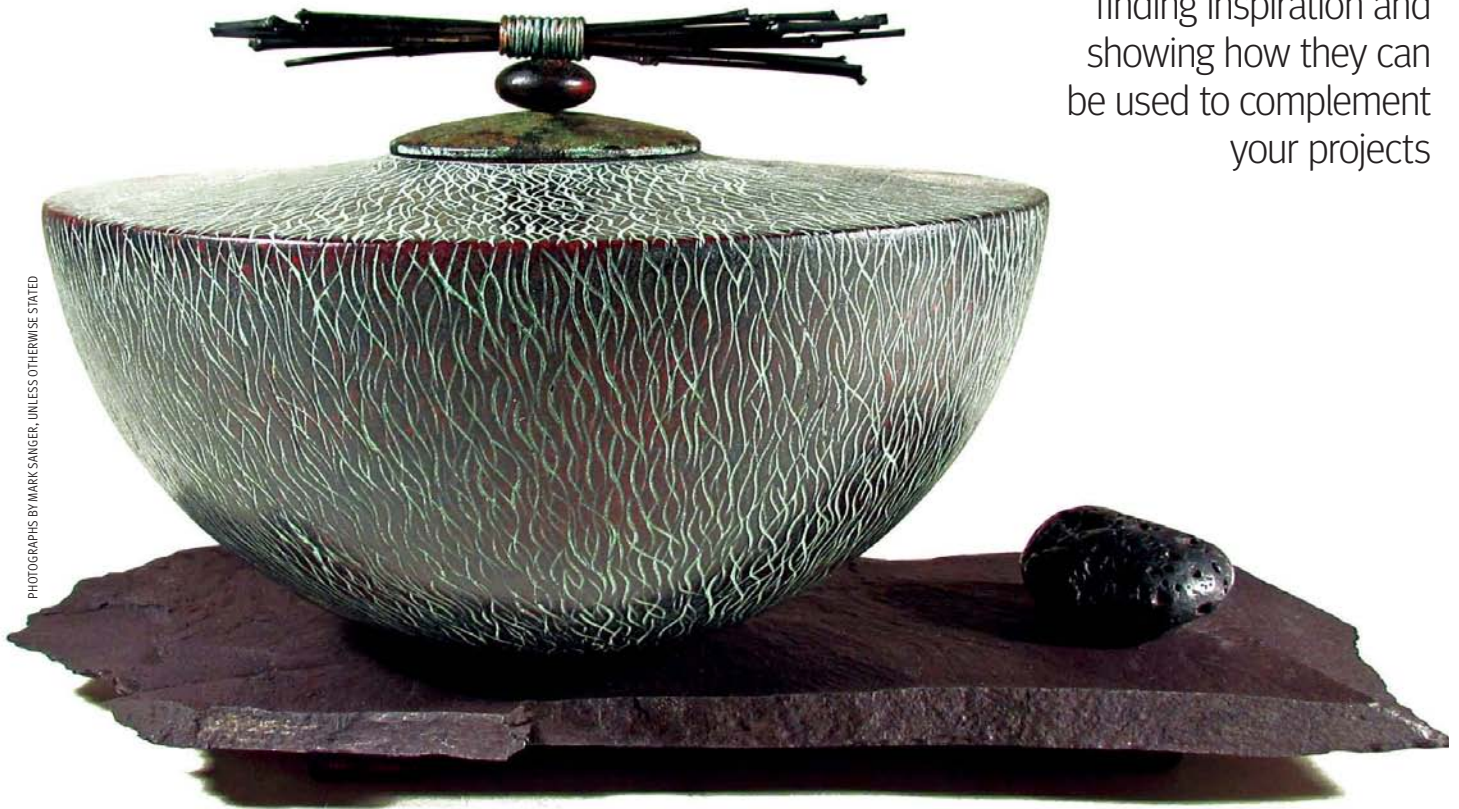
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# Developing supports for your turnings

**Mark Sanger** explores the subject of developing supports for your turnings, finding inspiration and showing how they can be used to complement your projects



PHOTOGRAPHS BY MARK SANGER, UNLESS OTHERWISE STATED

## MARK SANGER



Mark is a professional turner living and working in Dorset. He specialises in creative turning that incorporates texturing, colour and mixed media. Mark has written numerous woodturning articles, demonstrates the craft, runs courses and has produced DVDs on the subject.

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In this article, I will give you a glimpse into supports, how to find inspiration for designing them with several examples showing how they can add to and complement your projects. I hope this article gets you thinking about supports and how they can add a dimension to your work. Try some of the ones shown here or come up with your own designs.

Supports of varying types have been used by sculptors, architects and engineers, to

name a few, for structural as well as aesthetics since time immemorial. Many examples are found in and around our local environment, so to start with I want to introduce you to the subject by looking back at various historical examples.



Stone garden lantern with arched base allowing it to be displayed above the water



Yew (*Taxus baccata*) lidded form with carved finial



## ◀ Aesthetics

More often than not, the projects we turn are standalone with our forms standing on a foot or flat base. There are, however, many options available to us, which can greatly alter the aesthetics of our projects. This is the subject I want to introduce in this article, hopefully so you will go away and have a go yourself at a few new ways of working and presenting your turnings. Often with a project, it is difficult to find ideas with which to work; however, we have many thousands of years and many cultures to draw upon, dating as far back as Neolithic times, if not before. Similarly, if we look at how our forefathers lived, we find a rich source of ideas to adapt and include within our projects.

Much of what we turn today is derived from pottery and ceramics of these forefathers, but long before clay was found, man was using wood and other natural materials from his surroundings to produce vessels to hold food and water, such as dried gourds. The photos and drawings here show a selection of gourds and illustrate the many shapes that are available to dry and hollow for vessels. The illustration of the bottle below is an example of the versatility of gourds; in this instance for the carrying of water that is still used today in many sub-Saharan countries. With the advent of clay, man could quickly manipulate and produce shapes to suit the



PHOTOGRAPH BY BETHANY SANGER

**A selection of gourds, kindly loaned by 'Fork & Flowers', Shaftesbury**

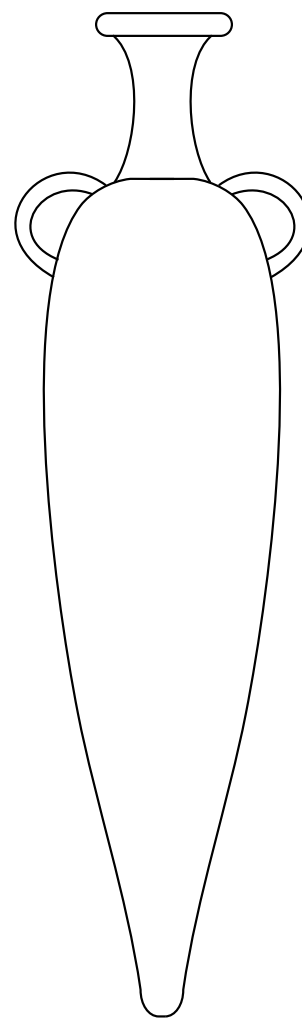
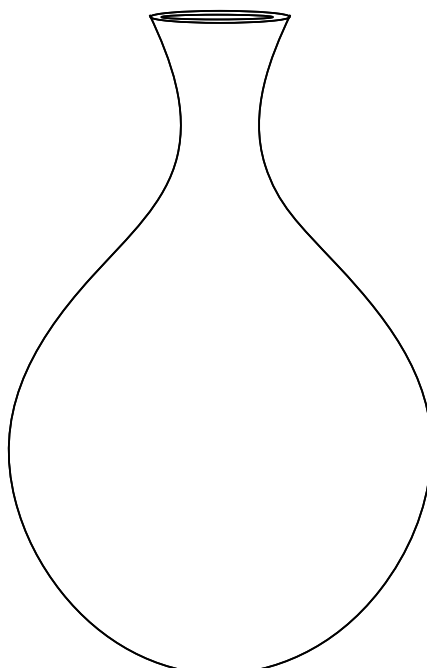
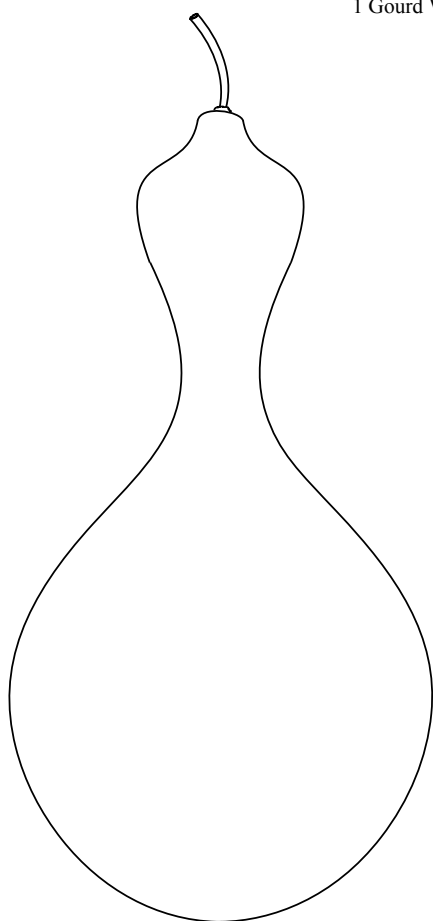
goods being carried and we start to see many variations, depending upon the culture they originated from. The first vessels were produced with a round base, which allowed them to be set down into the sand or soft soil of the early dwellings. One example you will probably be familiar with is the amphora – shown here – which is generally a tall and slender shape with a pointed base. This shape allowed it to be stood in soft ground as well as tilted for the pouring of liquids and ease

of storing and transporting. Much later with the introduction of solid floors, many vessels would be held in metal stands on slabs of stone and eventually, the foot as we know it today, was introduced widely to bowls and other vessels.

**2 Amphora**

**1 Gourd Water bottle**

**Examples of gourd water bottles and amphora**





A clay amphora on a stand, from Poole Museum



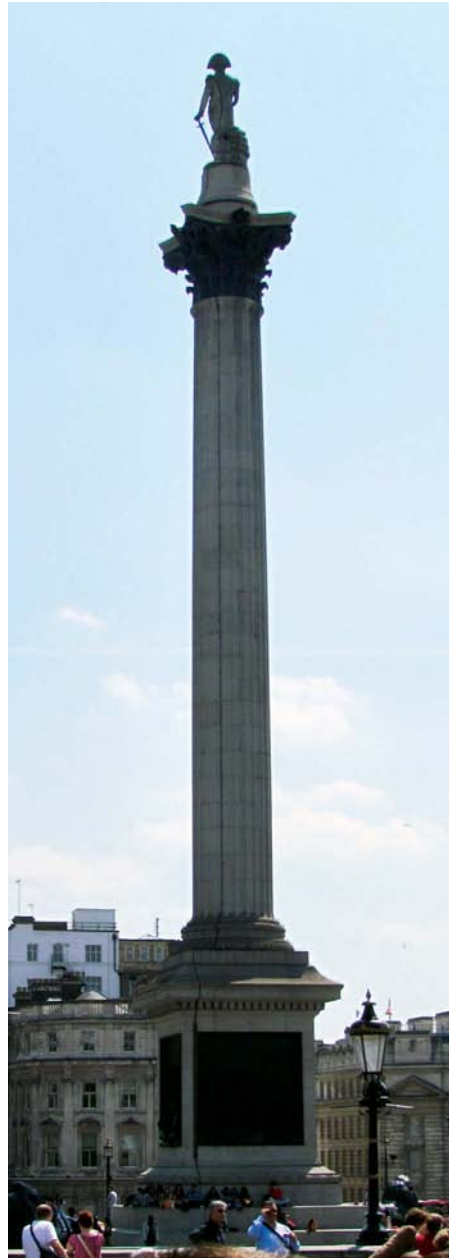
Another older exhibit from Poole Museum



An urn water feature



A Japanese-style stupa



Nelson's Column

## Collecting ideas

My digital camera is never far away from me for collecting images at museums, stately homes and gardens, which are all places rich in historical sources of architecture, sculpture, pottery and many other items. Add to this libraries, magazines and the internet and you have a massive archive of shapes, forms and ideas to work with. Always ask before taking photos at a museum or exhibition as some prohibit it, especially if using a flash due to the impact on others nearby and some venues simply do not allow photography at all. Always ask permission or you may be asked to leave. Here you can see some photos I have taken with kind permission of Poole Museum, Dorset, of a few vessels in their collection. Here we see some of the shapes and forms available, which we can develop for our turning projects. Looking a bit further afield, the other photos show an urn water feature, a Japanese-style stupa and Nelson's Column, all of which are mounted for display on a simple stone slab, ornate feet or pedestal and column. While the stupa and Nelson's Column may seem somewhat removed from a turned item, there are several parts of each that can be utilised for a support in our projects. Next, I will show through sketches how supports can be developed using some of the photos shown here as a reference for ideas.

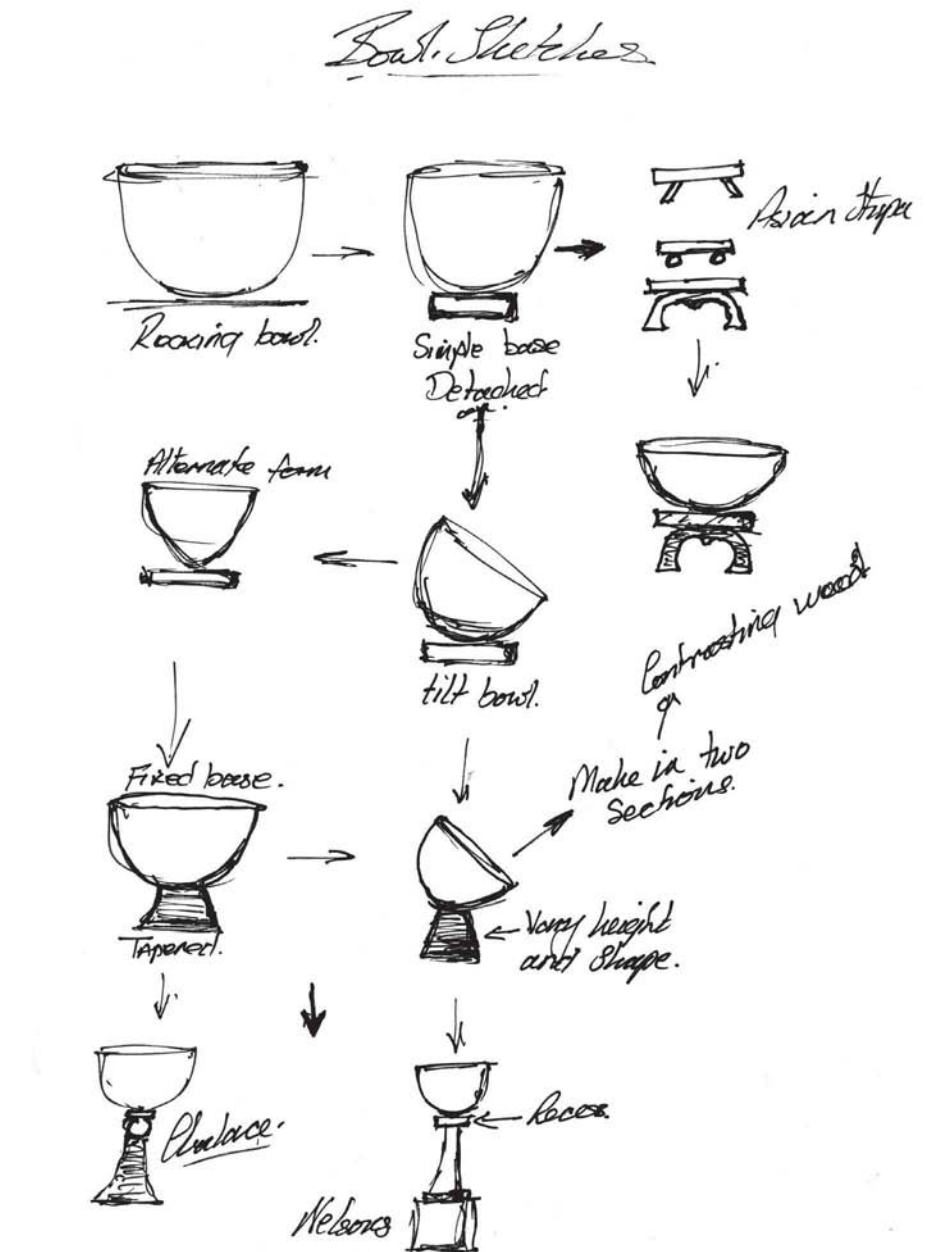


A pot from Poole Museum, Dorset



## ◀ Pencil and paper

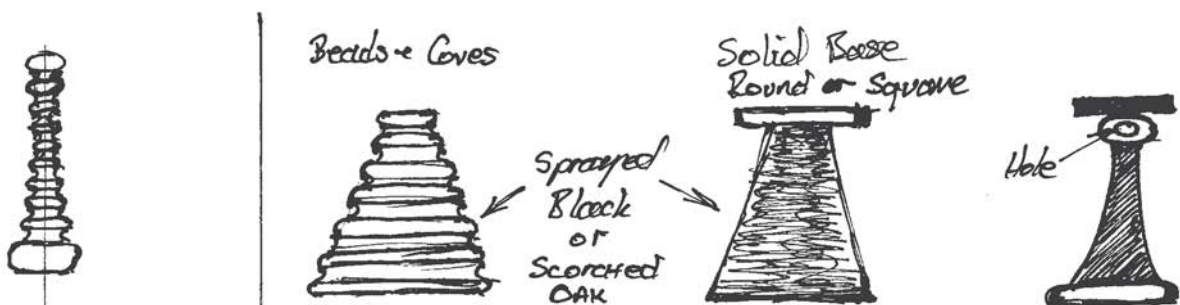
Before we go to the lathe, it is good to have an idea or two to work with and this is where a pencil and sketch pad comes in handy. It may seem a bit old school in today's hi-tech world, but sketching is a quick and easy way of developing ideas. To start with, pick out aspects from the photos that interest you: it may be the shape of the pedestal a sculpture is mounted on, the shape of a spire or finial as with the stupa that you want to include in your project, or you could use this literally as in the yew (*Taxus baccata*) lidded form with carved finial, shown on page 17, which I made some years ago. It includes a simple amphora-type stand and you could produce a similar version in wood. Working chronologically from a round-bottomed bowl, I sketched a few supports using the photos as reference. At this stage, these are initial ideas and thoughts with nothing set in stone. Afterwards, you can explore each idea in more depth to build up variations on the theme. Starting at the top, you see a rocking bowl without support; to the right is a simple rectangular detached base as with the support for the urn water feature and here, the round-bottomed bowl can be displayed at various angles by simply including a shallow concave recess in the base to sit the bowl into. Moving down, a simple tapered pedestal has been added, which was loosely derived from the finial of the stupa – again, this can be fixed or detached allowing manipulation of the bowl. Next, the base has been extended to include a greater curve leading up to a bead at the top and is very similar to what we may recognise as a chalice; to its right is a literal interpretation of Nelson's Column and finally, top right shows a literal use of the stupa base with a few simplified alternatives. Each of your ideas can be investigated further and to illustrate this, the drawing below shows a few sketches using the top of the stupa as a starting point with a few alternatives. Don't take the process too seriously – just draw whatever comes to mind and don't worry if you make mistakes. The sketch to the right has a hole through the bead at the top and the reason I came to this idea was that all the ones I made before are solid so I thought, 'let's do the opposite and include a hole'. It is as simple as that and doesn't matter if it doesn't work as eventually, you will



Some bowl ideas, sketched out

**“...sketching is a quick and easy way of developing ideas”**

come up with something that sings out and you can then continue to develop this idea further, and so on and so forth. To date I have many sketch books collecting dust from this same process. Every now and then, I look through them if I am stuck for ideas and some of the sketches I did not think viable before take on new meaning and are developed further.



Further sketches showing development, with the stupa as the main point of influence

## Technical and cost implications

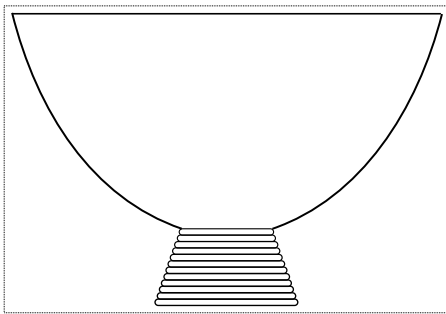
Once we have our basic designs, we need to consider the technical implications of how we are going to produce them. Often, only a few minutes thinking can save time and money at the lathe. An example of this is the bowl with pedestal shown here. If the pedestal is nothing more than a fixed extended foot, then we may decide to turn it out of a 75-100mm-thick bowl blank, but if the pedestal is taller or we wish to leave the bowl detached so it can be tilted, then it would be more cost-effective and less wasteful to turn the bowl from a

suitable cross grain blank and the pedestal from an end grain/spindle blank. To fix the bowl into the pedestal, a small spigot can be left on the base of the bowl with a hole drilled in the pedestal to suit, apply wood glue fix in place and allow to dry. This could be developed further by elevating the bowl from the pedestal by fixing a metal rod between the two with a third option as shown below.

Many shapes suit supports. A simple arch inspired by the small bridges seen in Japanese gardens was used as shown

here to support a lidded form. For this piece, I simply cut it out from a suitable section of limewood (*Tilia vulgaris*) – which is normally used for carving – but this timber's properties usefully allow it to be shaped easily for supports. Another popular method of making supports, especially for more complex shapes, is to laminate and glue thin sections of plywood to a template using clamps. An article by Mark Baker covering this process appeared in issue 246 of *Woodturning* magazine.

*“Often, only a few minutes thinking can save time and money at the lathe”*

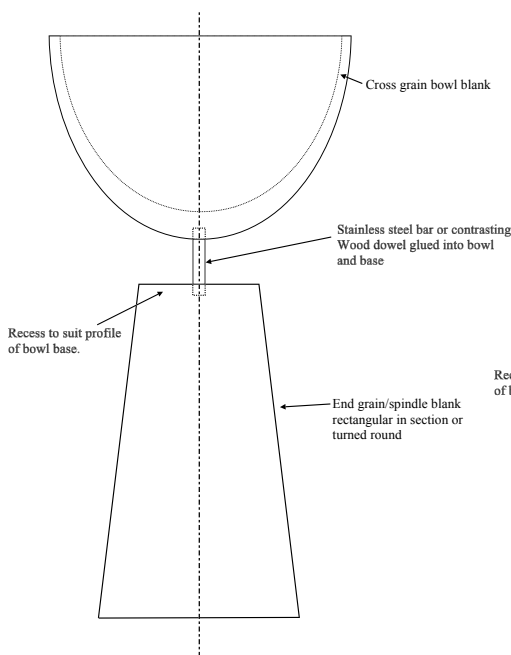


Bowl and integral pedestal turned from a thick bowl blank

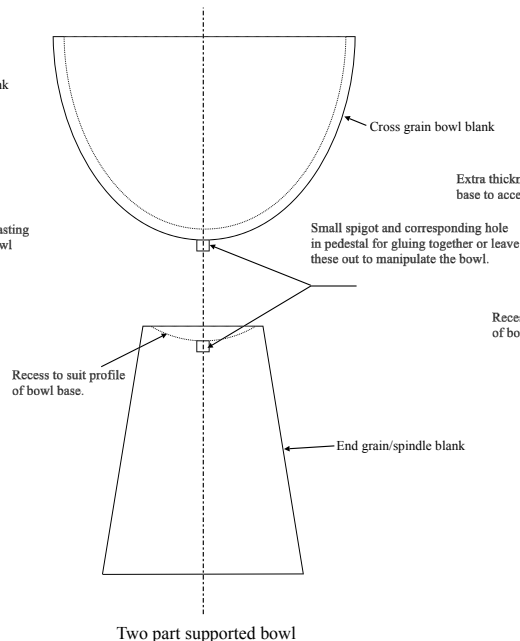
Drawing of a bowl on a pedestal



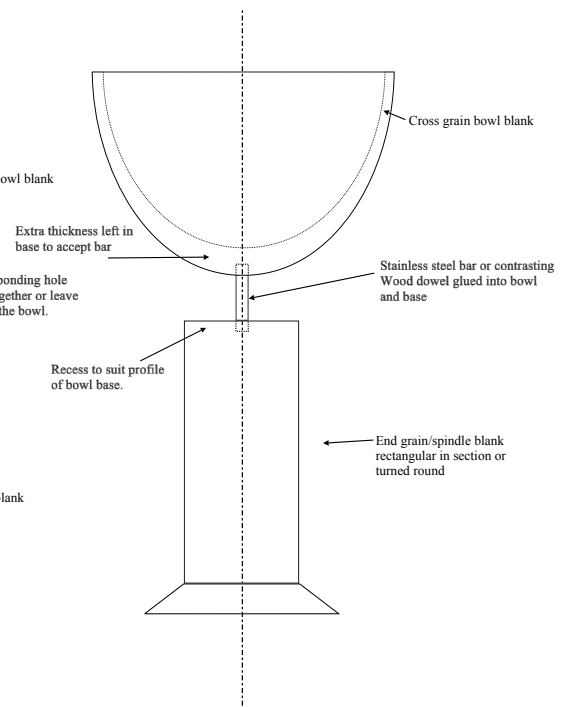
Using an arch shape as a support



A metal rod can also be used to fix the two pieces together



The bowl can be fixed into the pedestal using a small spigot



A stainless steel bar or contrasting wood dowel can also be glued into the bowl and base



## Using natural materials

Using natural materials presents a simple and effective way to display our work and introduce a variety of contrasting textures, colours and forms. I enjoy using stone, slate and other natural materials in my work. Stone, slate and pebbles can be found at garden centres and other related outlets and require minimal preparation for use. The supports here show a bowl and lidded form sat on slate. The only work needed was for me to stain the slate black with spirit stain, buff with a soft cloth and to add surface protectors to the underside to protect the surfaces it was displayed on. Slate can also be cut and shaped using stone chisels, stone saws, suitable burrs and files. The chips and dust from these are particularly dangerous if they get in your eyes or are inhaled, so always wear suitable eye and lung protection when working as with all materials.

Thin slabs of wood can also be shaped and stained if you prefer to use wood. Here you can see a piece supported on stained shaped ash (*Fraxinus excelsior*) as

well as ivy from a dead tree, the bark of which I stripped off and finished with abrasive and oil as a second mount for the vessel. Old weathered and cracked oak (*Quercus robur*) gate posts are another great source I use for wood supports as they include cracks, knots and other interesting features, which are ideal if you are after an aged effect and is especially effective if scorched with a blow torch, rubbed back with a bronze brush and oiled for outdoor display. The three examples shown on page 21 can be turned to round or made by cutting a square end grain section of wood on the bandsaw to produce a flat-topped four-sided pyramid. The latter lends itself to larger projects where lathe capacity may be an issue and is one I employ using oak as supports for garden sculptures. Once cut, the surfaces are heavily scorched outside away from flammable materials, allowed to cool, brushed with the wire brush and either left to weather naturally, sealed with oil, or for smaller indoor projects, sprayed with acrylic sanding sealer to prevent the carbon

from rubbing off. The wedges cut from the side of the square sections can also be used for a support, as shown bottom right. Here a small sphere was turned to a suitable size and fixed to the underside of the wedge, positioning the top surface horizontally to support the round-bottomed Holm oak (*Quercus ilex*) bowl. The turned plinth also shown is made by rough turning a suitable end grain blank to the round between centres, cutting a spigot at one end, removing and then tightening in the chuck. The profile was turned to a taper with beads being added and a concave recess turned into the front face to accept the bowl. Finally, the support was parted off to length with a thin parting tool, scorched, then sealed with acrylic spray sanding sealer.

In my next article, I will look at some methods for adding surface decoration using turning, carving and other related techniques and how this can be used to complement several turned forms as well as incorporating some of the supports shown here. ●



A piece of stone used as a support



A piece supported on stained shaped ash (*Fraxinus excelsior*)



A turned plinth decorated with beads again, which has been scorched and treated



The wedges cut from the square section can also be used as a support

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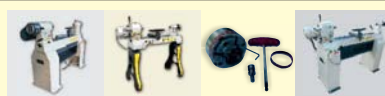
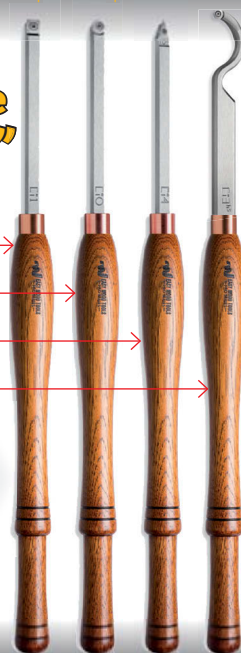
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# Carved shamel ash bowl

Andrew Potocnik takes inspiration from a tulip to create this stunning turned and carved bowl in shamel ash



PHOTOGRAPHS BY ANDREW POTOCNIK



The tulip that influenced Andrew's design

In an attempt to tidy up my stash of timber, I stumbled upon a short piece of rough-sawn ash (*Fraxinus spp.*) I'd set aside to dry about 20 years ago and, quite frankly, had forgotten about. However, this chance rediscovery set my mind to thinking about how to incorporate stray chainsaw cuts into an overall carved profile. If I followed traditional turning thinking I'd be left with a very shallow bowl, so how could I make the most of this piece of timber?

About 350mm square and somewhere up to 50mm thick, this piece immediately set me an alternative design challenge, which demanded a carved profile to make the most of available timber. I thrive on challenges as they force me to think outside my personal

comfort zone; however, these challenges enable me to develop concepts I'd never have considered before, so off I went...

## ANDREW POTOCNIK



Andrew sees inspiration around him every day. He 'arrived' on the Australian woodworking scene in 1983, and since then, his work has developed into areas of sculpture,

furniture making and the odd bit of cabinetwork.

[andrewpotocnik@telstra.com](mailto:andrewpotocnik@telstra.com)

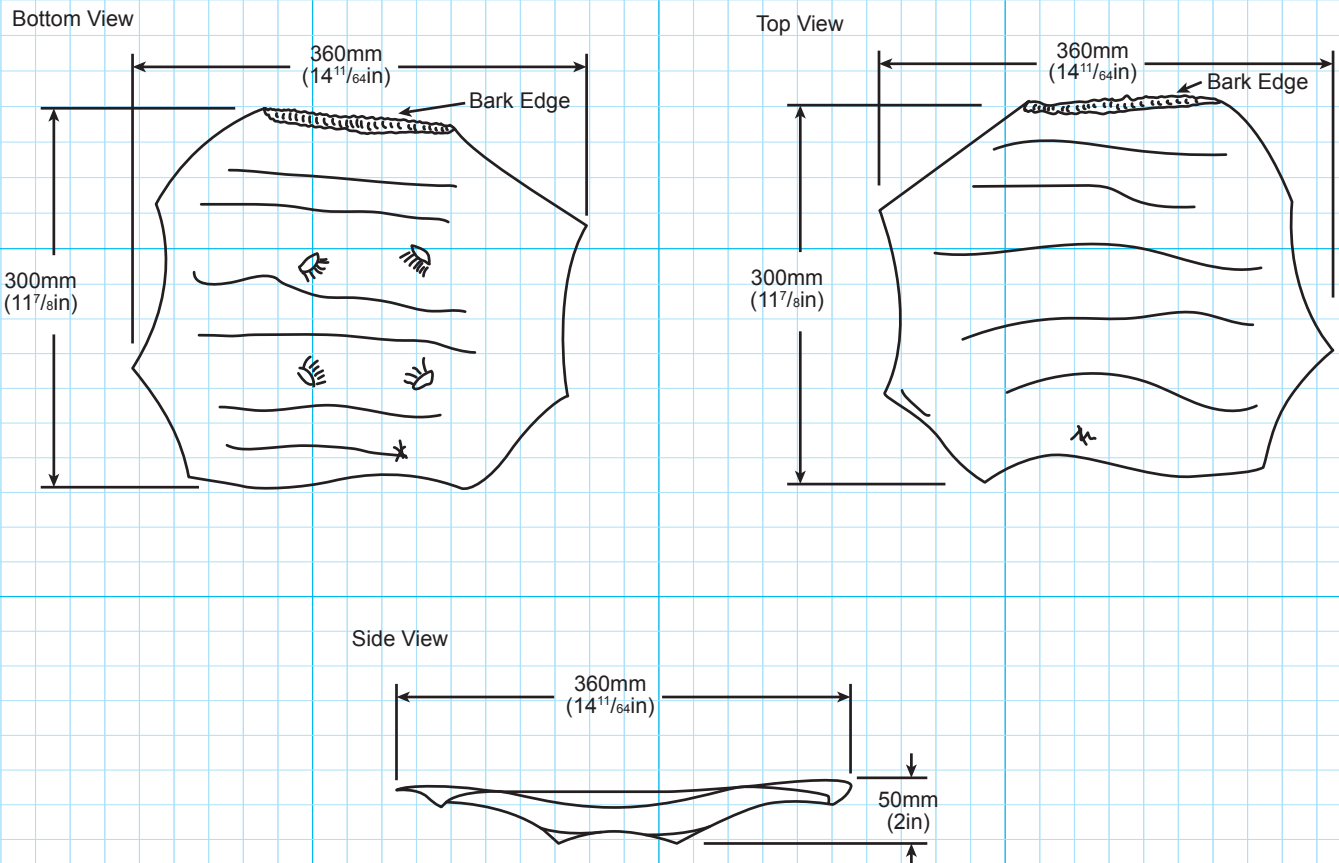
## EQUIPMENT USED

Shear scraper  
Parting tool  
Carving gouge  
Bandsaw  
Hot-melt glue or PVA  
Rotary sander  
Range of abrasives  
Angle grinder  
Non-slip mat  
Clamps  
File  
Sanding sealer  
PPE: latex gloves, facemask, respirator/dust mask

## TIMBER REQUIREMENTS

Ash (*Fraxinus exelsior*) approximately  
360 × 300 × 50mm

## PLANS



1 The original piece of wood, just as I found it with a bark edge, weathered with stray chainsaw cuts



2 Trim off any protruding corners on the bandsaw to make turning a little safer without reducing the timber to a round blank, hence allowing greater scope for profile shaping that can be developed later in the process



3 Push the blank up to a carrier mounted to a faceplate and secure in place with the tailstock; this is a friction drive method and relies on the tailstock staying in place and the carrier block seating perfectly on the timber. For extra reinforcement/hold, you could apply hot-melt glue on the carrier



4 Turning can now commence, beginning with trimming off rough surfaces and establishing an overall form ready for refining

## HANDY HINTS

1. Seize the opportunity to explore a new dimension of your turning
2. Don't shy away from a piece of wood that isn't round or may have fissures, may contain some bark, or even a knot or split. Think about how you can exploit these elements and celebrate the natural qualities of the timber



5 Carry out the refining of the base with a shear scraper, creating a 'ring' that will later be carved to form feet for the bowl. Trim the inner part of the ring to shape, even though the stub to which the tailstock centre is retained for relocating the form later in the shaping process

6 To reverse the bowl and enable its top to be turned, it needs to be attached to a carrier. Using a pair of callipers, measure the outer diameter of the ring...

7 ... and transfer the measurement to a carrier mounted on a faceplate. The process is simple, but can lead to dire consequences if not carried out correctly. First, place the left leg of the calliper on the toolrest and gently bring it into contact with the carrier, keeping the right leg clear of the spinning timber! Once a line is scribed by the left tip, bring the right tip in just short of touching the carrier and check that it aligns with the scribed mark. If the line and right tip do not align, you will need to either move the left tip to the left to create a larger mark, or to the right to reduce it before you know exactly where to cut into the carrier with a parting tool to create a 'seat' into which the bowl's base can be fixed

***“To reverse the bowl and enable its top to be turned, it needs to be attached to a carrier”***

8 I like to use heat sensitive glue – hot-melt glue – in these situations, but you could use PVA to create a permanent bond, which will also give you a bit more security later in the process once the tailstock is removed. When using heat sensitive glue, allow it to heat to bubbling point, apply heat to both surfaces that will be bonded with a heat gun before pressing bowl, glue and carrier together quickly, so the bowl will sit neatly in the carrier and spin truly. This can be aided by using the tailstock to help align the bowl, but the key is heat and speed

9 With the top section of timber ready for turning and the tailstock in place...

10 ... it is time to begin roughing the interior of the bowl...

11 ... before refining the shape with a scraper. You can see that there may be a substantial amount of wood retained on the outer edges of the bowl at this stage, which will later be carved away to create a flowing wavy edge

12 Remove the centre stub and rough sand the bowl's interior, using a rotary sander and a fairly coarse grit abrasive...







13



14

**13** ... ready for the edges to be shaped. Initially, use an angle grinder attachment to remove the bulk of unwanted material...

**14** ... before moving to hand tools to refine the form

**15** Do the initial sanding with a sanding attachment fitted to your angle grinder, aiming to create a smooth transition between turned and carved surfaces



15



16

**16** The key here is to trim the upper and lower surfaces to a thin edge – similar to some floral forms I had seen recently at a tulip show. You can achieve this by sanding down some upper surfaces, while sanding up some of the lower edges. All in all, the intent is to create a feeling of 'floating' lightness in the finished form, almost like an oceanic 'Spanish Dancer'

**17** As you can guess, the next stage involves elbow grease and hand-sanding along the grain to eliminate mechanical sander marks and ensure that the surface flows smoothly from one edge to the next. After all, these works are meant to be tactile as much as visual, so they need to be pleasant not just to the eye, but also to the hand

**18** Once the upper surface is rough sanded to 120 grit, it's time to reChuck the bowl so the underneath can be refined. Using the previously used carrier – padded with some non-slip kitchen mat – position the bowl...

**19** ... so the tailstock can press it firmly into place...

**20** ... and the foot form can be refined so it flows, as much as possible, into the newly shaped surface



17



18



19



20

### HANDY HINTS

- 3.** Now that I've found, what for me, is a new way of working around 'problem' areas that reduce the workable size of a blank, I can see further potential for developing carved profiles that prevent cracked or poorly cut blanks going to waste. They just may need a little more time and eventually earn more in sales
- 4.** Think of all those blanks you've put aside to dry, which developed end grain cracks you thought had made the timber useless. Here's another way to make the most of nature's intervention and still create a successful new piece, most likely well beyond original intended designs
- 5.** When looking for inspiration, don't let nature pass you by, it's had the upper hand on us 'creative' people for centuries. The tulip form, which influenced this article, is a great example of this point



21 Using the lathe's indexing system, mark out four divisions from which feet will be carved. Be careful in how you lay these out as the wood may distort later causing the bowl to rock. If you locate feet at cardinal points – North, South, East and West – with the grain running North/South, the bowl may eventually cup or bow leading to two of the four feet not contacting a table surface. If you position the feet North/East, South/East, South/West and North/West, there is a greater chance that all feet will still contact a table's surface even if there is distortion. Further still, if the design allows for three feet, then you're safe; however, there are design matters to consider with turned forms supported by three feet, but that's another matter



22 As the bowl is not perfectly symmetrical, you need to check whether it will stand balanced on the four feet. So, prop it up on small spacers placed where the feet are to be carved and place it on a raised surface. Fortunately, mine sat balanced!

23 Next, it is time to do some fine trimming of edges – I couldn't help but think back to the wonderful free-flowing shapes I had seen recently at a flower show, which featured some very diverse tulips



***“To create lightness to the bowl, carve away portions of the ring”***

24 To create lightness to the bowl, carve away portions of the ring. Clamp the bowl to your bench via a holdfast and go to work with a carving gouge to remove as much material as you feel necessary, but leave that little bit to spare for later refinement. Practice makes perfect and as you become more accomplished and confident, you learn to know just how much to remove and how much to leave



25 Use a file to refine the feet, blending surfaces on either side of what was once the 'ring', to ensure the whole form flows under the deft touch of discerning fingertips and to the watchful eye

26 Inevitably, hand-sanding is part of the refining process so a bit of quiet time combined with a bit of elbow grease will lead to a satisfying flowing surface and form

27 Finally, use 320 grit abrasive to 'ease' all edges and finish all surfaces before applying a finish to complete the bowl. I opted for a coat of sanding sealer, which was later sanded back before a wax finish was applied



28 Your finished bowl should look something like this ●



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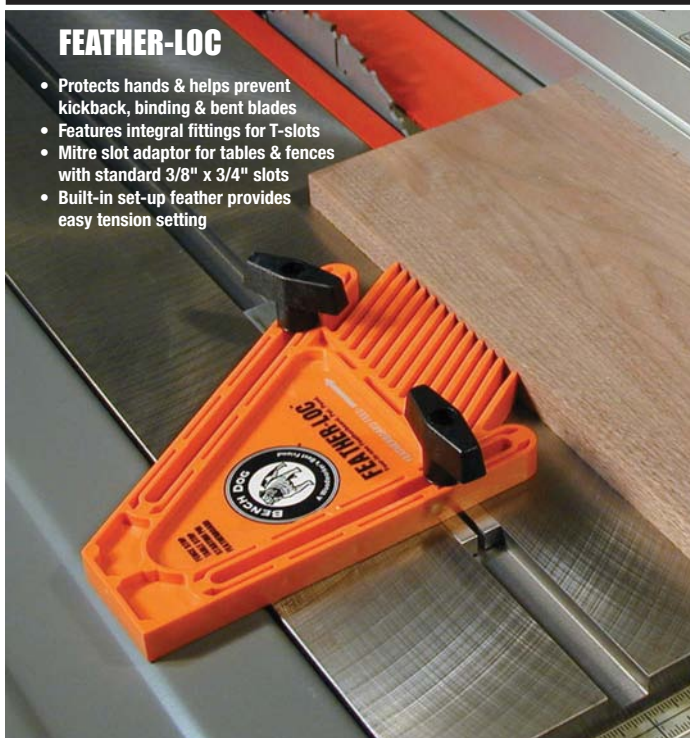
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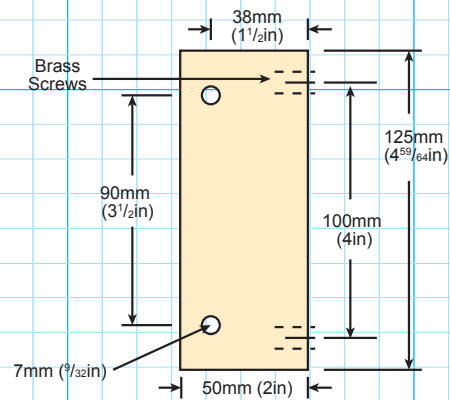
This month, **Anthony Bailey** and **Mark Baker** look at a homemade device for applying decoration to turned spindles, such as tapered legs, courtesy of Philip Steele

# Router jig for applying decoration to turned work

Last month I demonstrated fluting tapered legs using a homemade U-shaped jig. This time, Mark and I will look at another homemade device by Philip Steele, which does a similar job but is a lot more versatile. We will investigate some of its other functions next time but, for now, let's look at fluting straight or tapered components. It is similar to bought ready-made versions on the market. Also, we take a look at a manufactured version from Paul Howard, although it is worth noting that there are other variants available. In order to get the best out of any of these devices, you will need a baseboard large enough for them to slide on and do their job properly over the full range of activity.

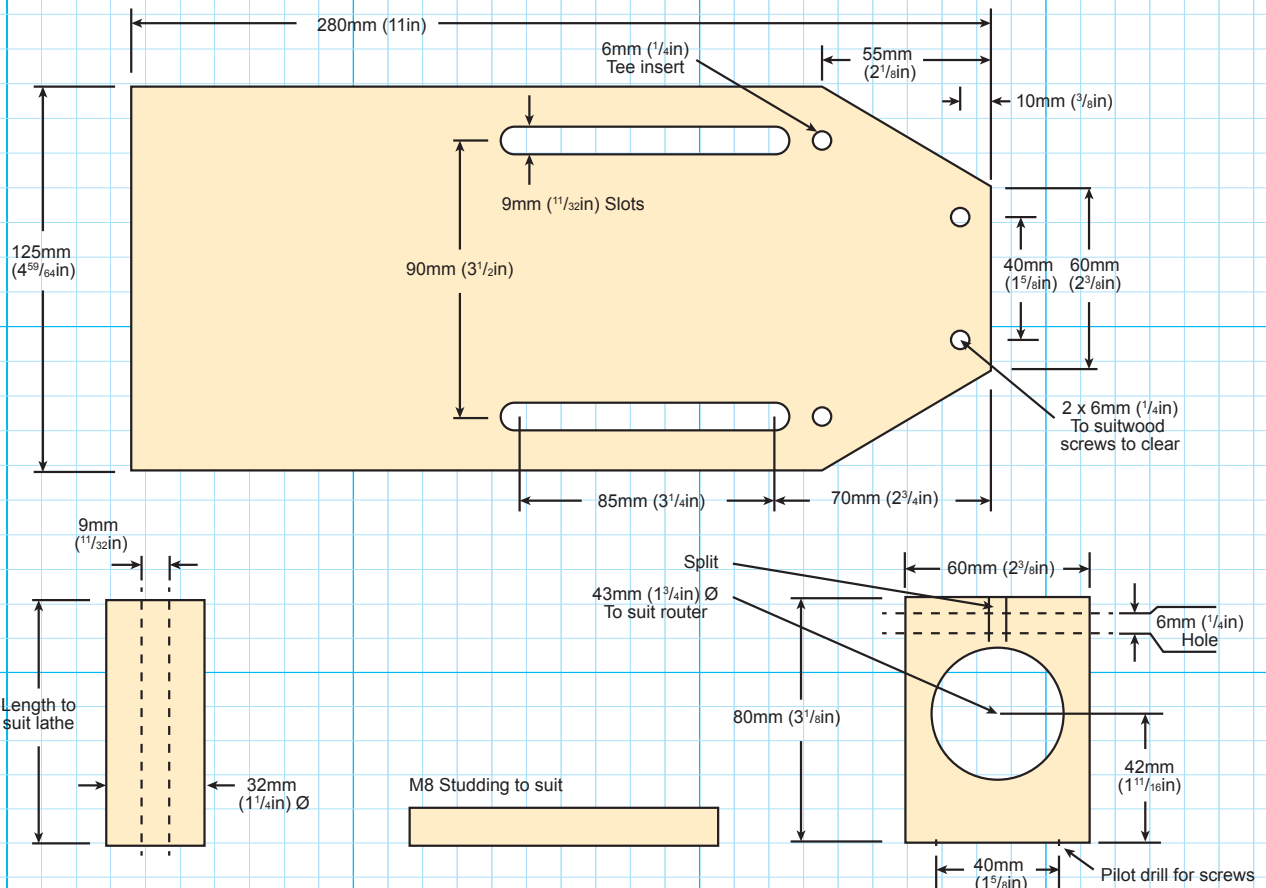


## INFORMATION & PLANS



## EQUIPMENT USED

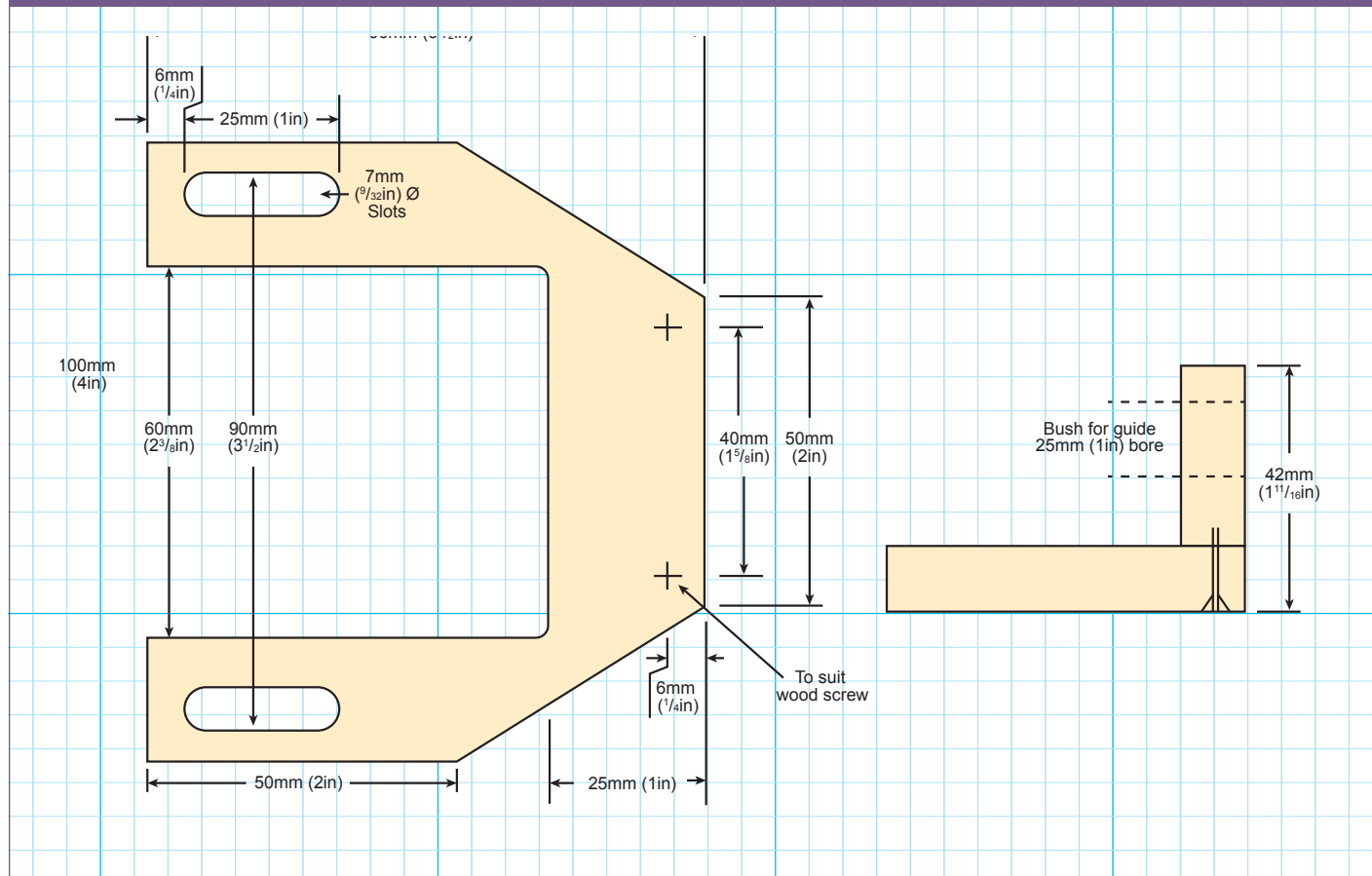
- 18mm MDF baseboard
- Standard T-nuts
- Forstner bit







## INFORMATION & PLANS CONTINUED...



**1** The jig consists of several parts, the most important being a secure mounting for a small lightweight router, such as the Trend T4E. The height of the turned tubular columns can be altered to bring the cutter into the same axis as the lathe centres, once the unit is sitting on a suitable baseboard. This height dimension is therefore variable, depending on your own lathe's swing over bed

**2** For comparison, Phil's unit is placed next to a proprietary model from Paul Howard. The latter unit has some refinements, such as infinite height adjustment and a cutter depth setting shield

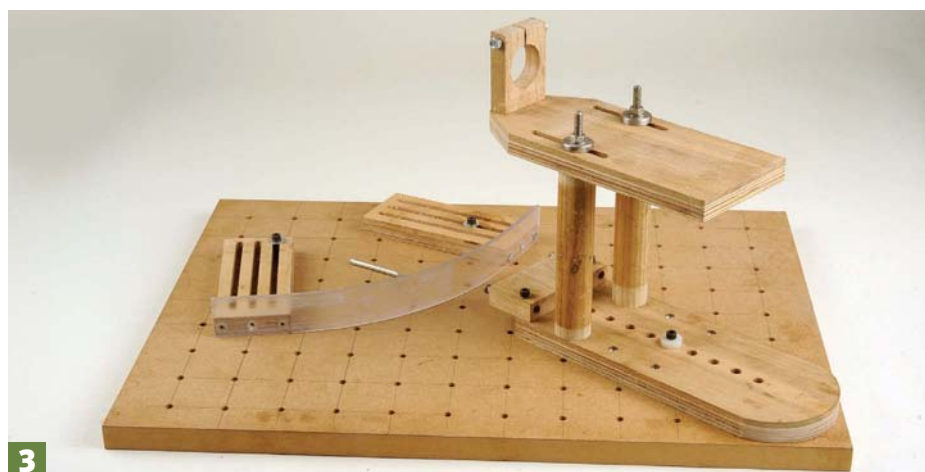
**3** The unit sits on a baseboard to which it can be bolted down so it can rotate on a regular arc if needed. Also shown here is a flexible plastic arc setting device



**1**



**2**



**3**

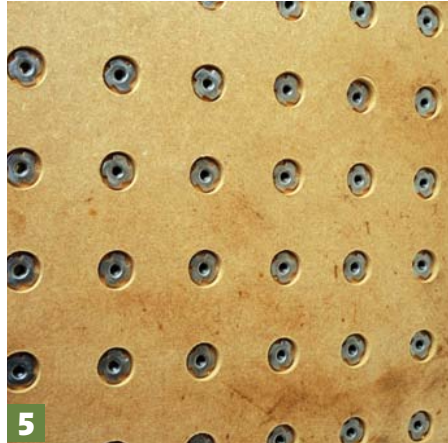
### HANDY HINTS

**1.** This project should only be a starting point – you can experiment and alter the design to suit your lathe and needs. See if you can improve on what we have done here and let us know what you have found out. Jigs can be altered, rebuilt and adjusted to suit. A stock of ply and MDF offcuts are of course essential for jig building





**4** The front of the router mount features two adjustable bolts that run along the plastic arc device to limit depth of cut when decorating bowls, etc. We will look at this feature in use next time



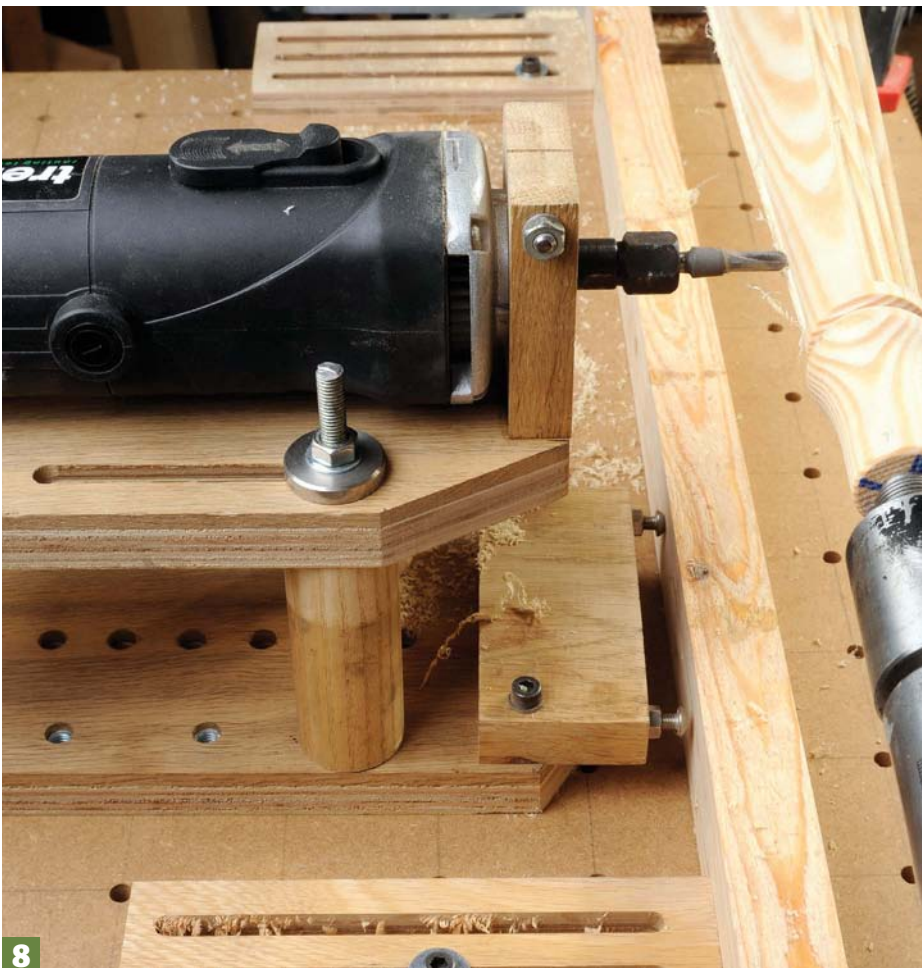
**5** First of all, we need a sturdy 18mm MDF baseboard. It has a regular grid of holes drilled large enough to accept standard T-nuts. These have teeth that bite into the MDF to lock in tight. The best procedure is to drill the small holes first so the grid spacing is exact, then follow with a Forstner on the underside to create shallow depressions for the T-nut flanges



**6** Clamp the baseboard securely to the lathe bed and the leg blank – in this case already part worked from the previous article – mounted between centres. The indexing plate is already in position behind the chuck

**7** The wooden columns that hold the router need to be adjusted in length to suit your lathe, so they are the correct height. Next, drill the centres right through to admit studding

**8** The router unit needs to run against a batten, which is bolted down to the baseboard. Set the batten at an angle identical to the leg taper; this will allow you to achieve a fluting of even depth from end to end



### HANDY HINTS

**2.** The big DIY 'sheds' aren't that useful for locating suitable hardware and fittings but we are lucky that we have a DIY store that carries an extensive range of studding, nuts and bolts, etc. In addition, you can buy these things online, including eBay merchants. For more specialised fittings companies like Axminster, Trend and Rutland have knobs, threaded inserts, etc., which are very handy for jig making. Half the fun at least is in making the jigs so it shouldn't be a chore – just experiment!



9 Here you can see fluting in progress working from the headstock end down the taper. Any tendency to fluff in the flute can be eradicated by moving back in the other direction. It is necessary either to start and stop the flute by eye or fit end stops on the baseboard

10 Repeating this procedure with the proprietary unit entails firstly mounting the router firmly by using an Allen key to tighten the collar around the router neck

11 Next, adjust the height of the router so it is on the lathe centreline. The long slots allow adjustment over a wide range

12 In this case, I withdrew the depth shield enough to avoid interfering with the cut. The problem with flutes so close together is that the shield might not sit evenly on the peaks of each flute and affect the accuracy of each flute. The blue dot on the shield is helpful in seeing where to start and stop each cut

13 Use the base to guide the flute depth as with the homemade version. Care is needed to avoid chippings packing between it and the batten



#### NEXT TIME...

We will explore the versatility of these fluting devices when they are used to decorate curved forms ●







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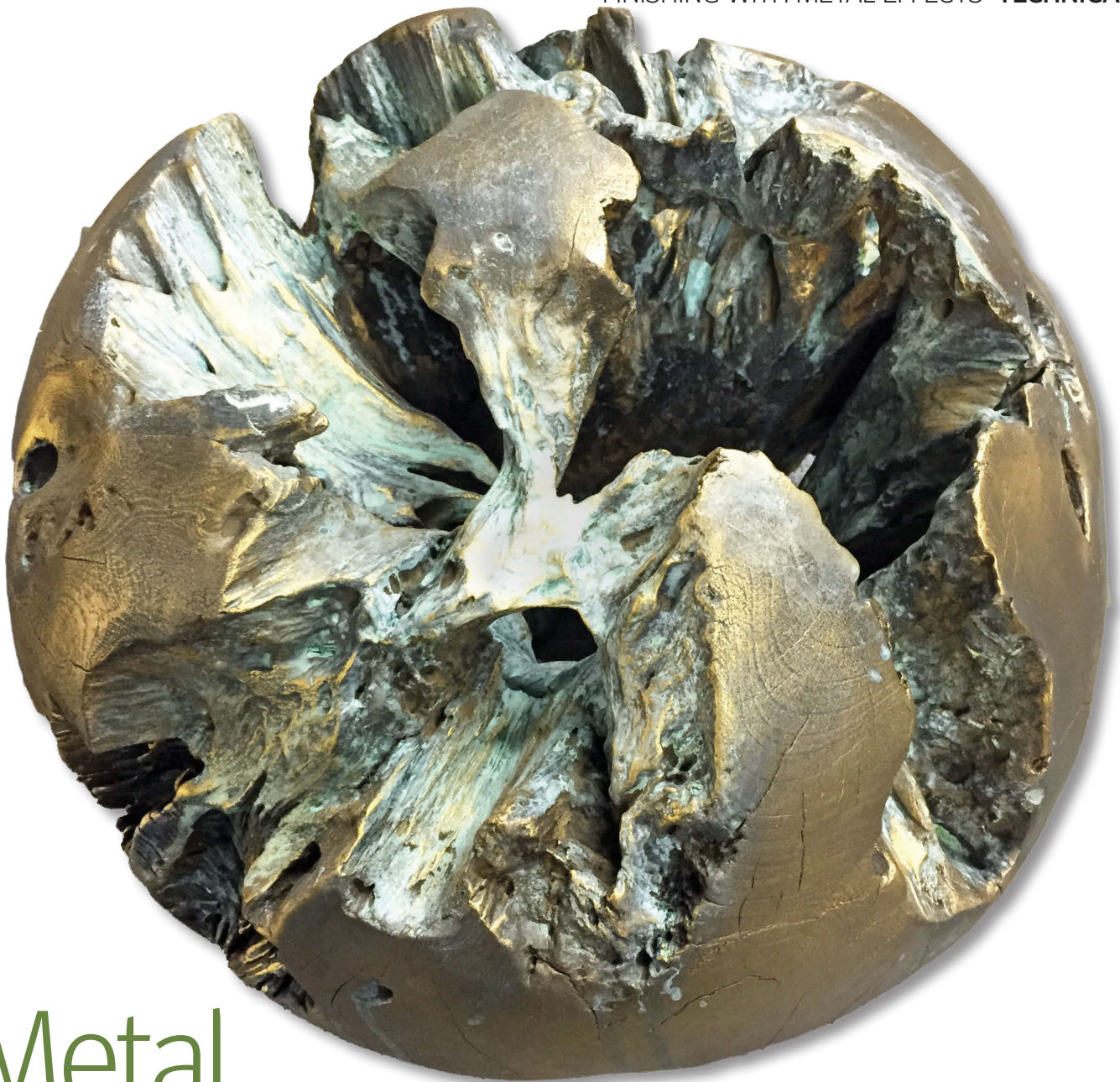
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PHOTOGRAPH BY NICK AGAR

# Metal effect finishes

**Mark Baker** and **Nick Agar** look at how you can use reactive metallic finishes on turned work

It was a chance question I posed to Nick some years back when discussing a new piece of work he had created. I asked how he achieved a certain rusty iron effect that set me on track to achieve one of my long-standing aims to create some 'ancient' pieces, which I had been longing to bring to reality but had not found the right products to get the results I needed. Nick's response was quite an eye opener for me when he smiled and said: "It comes in a bottle." Quizzically, I probed further and he told me it was one of a selection of reactive metal paints that oxidise over time when exposed to the elements.

Alternatively, this process can be speeded up by using pre-prepared activators or ageing solutions.

I must add that he did ask me to keep this secret to myself as there was a lot more experimenting to be done in terms of how they could be used and what could be done with them. So, we both set off exploring these further. This article is in response to requests from us both as to what we use and how we do it, so here is a collaborative article where we show some of the effects we create using these coatings and a quick guide to using them and avoiding some of the pitfalls.



PHOTOGRAPH BY NICK AGAR

Patinated bronze effect with gilding wax highlights



## ◀ Bronzed and patinated pieces by Nick Agar and Mark Baker



PHOTOGRAPH BY NICK AGAR



LEFT: Turned and carved ammonite with patinated bronze coating, by Nick Agar  
 ABOVE: Shield by Nick Agar, with a bronze finish used on its own and then burnished when dry  
 BELOW LEFT: Copper patinated sycamore (*Acer pseudoplatanus*) bowl with turned and carved detail, by Mark Baker  
 BELOW: Bronze-effect lidded vessel, by Mark Baker



PHOTOGRAPH BY NICK AGAR



### WHAT ARE REACTIVE/OXIDISING METAL FINISHES AND RELATED PRODUCTS?

Quite simply, they are water-based paint products that have a metal content in them that, when set, forms a hard layer on the substrate they are applied to. They can be applied with an airbrush, brush, sponge applicator, and no doubt there are a few other routes too.

There are two companies who supply them, both of which have extensive web presences and video clips to show how to use their products: Modern Masters and Sculpt Nouveau. Depending which make you go for, there are various metal finishes

you can opt for and use patinas to apply to them should you choose to. That said, you can use the metal coating on its own and then apply another product on top to create a given effect. The metal coatings looked at in this article are iron, copper and bronze.

The patinas are thin liquids you can spray, sponge, drizzle, etc. onto the coated surface. You need to read the well-written instructions to know whether you apply these to wet freshly-applied coatings or once the coating has dried. They come

A range of metal effects products from Modern Masters





in various colours and types. There is a specific one for iron and various colours for copper and bronze, but here, we looked at shades of green and blue.

Depending on what you coat, you might need a primer. A special one from both companies is available, which coats the surface and prevents any contaminants leeching from the surface and affecting the metallic finish. Also available are specialist clear surface coatings with different lustres, which protect the piece it is applied to and stops the oxidation process from happening, or you apply the ageing solution followed by the top coat at a point of choosing to stop any further reaction at that point. It is worth noting that the coatings are not food-safe, so they should only be used on items that are designed to be sculptural and looked at. Also, it is best not to place jewellery and other metallic items on a patinated

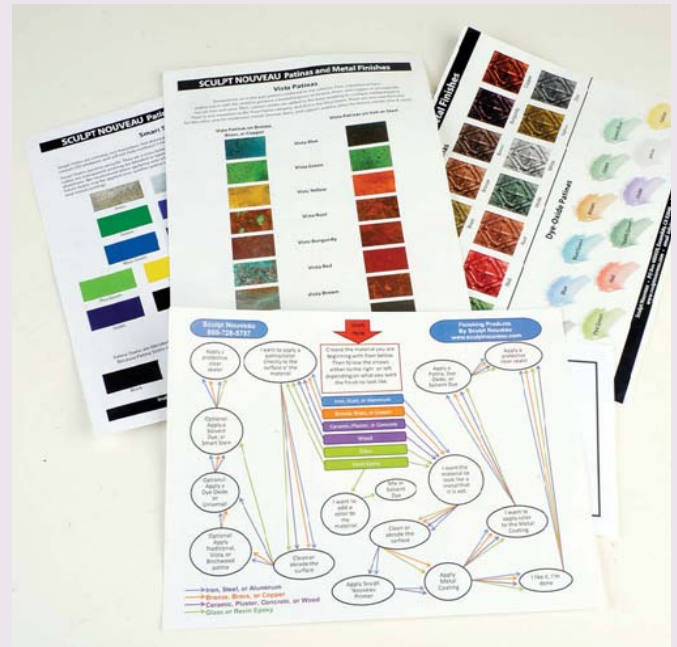
surface that has not been sealed with the surface top coat, as you may end up with a reaction occurring. I err on the side of caution and only use the effects on sculptural items.

Warning: take note of

A range of metal effects products from Sculpt Nouveau



all the safety precautions when using these products and wear the recommended PPE at all times. That means gloves and eye protection at all times and also lung protection when spraying the patinating fluid and sanding the metal coating and aged surface. Some of the chemicals are hazardous/harmful.



Data sheets from Sculpt Nouveau, showing the different effects you can achieve



## Creating a patinated metal finish

**1** Surface preparation is key to getting a good finish. Wood is different to metal plaster and other substrates and you have a choice to apply your metal coating directly onto a sanded – to a fine grit grade – bare-wood surface. Alternatively, you can apply gesso, texturing pastes and then prime it. You can use the specialist primer, or, we have found good quality primers from hardware stores work well when coating wood. If you use water-based products, then you may end up raising the grain, or highlighting areas you have not sanded well previously

**2** If you find that you have ended up with any surface anomalies, you need to remove them at this stage. A quick sand will solve most of them, then...

**3** ... apply a quick recoat of primer, or a coat of metal finish if you applied this onto bare wood

**4** Assuming you have used a primer, you can now coat the surface with the metal finish of your choice. In this case, it is copper – the two in the background have been coated with a bronze finish. If you are applying the metal coating to a textured finish, make sure you get in all the nooks and crannies without over-filling it, thus causing runs of the coating to form



5 Once the first coat is dry, denib it with a fine abrasive and wipe the surface clean, then, give it another coat of metal coating. It is all too easy to inadvertently pick up dust and debris on the brush, so keep clean paper kitchen towel handy and wipe the brush on it every so often



5

6 If you are using the copper and bronze coatings and you want to use a patina coating, don't allow the second coat to dry. Instead while wet, spray your chosen patinating spray. If using iron coating, one make instructs you to let it dry before using the patinating fluid and the other suggests using on a wet coat



6

7 If you are working on the inside of your work, you may find that a pool of the patinating fluid can settle at the lowest point, which can look unsightly, although gives the effect of an aged bronze or copper vessel. To reduce the puddle size, touch the top of the fluid with paper towel to suck up some excess



7

8 Here you can see the freshly coated copper coating, which has been sprayed with a green patinating fluid



8

9 Here you can see the freshly coated bronze coating, which has been sprayed with blue patinating fluid



9

10 Here you can see the inside of the finished items. The piece on the upper left-hand side shows what happens when a pool of patinating fluid dries in the bottom. This piece and the lower one also show clear brush marks. The top right-hand piece shows no brush marks and most of the surface has been aged. By altering where and how much patinating fluid is applied, you can have a lesser effect and here, have clean metal showing through. If you need to start again, sand the surface – wearing PPE – and either re-coat with metal coating followed by the patinating fluid, or sand, re-prime and then go through the coating and patinating process again. If you do not re-prime, the previous coating of patinating fluid can affect the fresh coat of metal coating that is placed on top of it. This is not necessarily a bad thing as this creates another look entirely



10

11 If you choose to seal the surface, you lose some of the effects seen in the previous photos. On rusty iron you lose the look of the powdery red residue and on the bronze and copper. The choice to seal or not is yours, but if you handle the rusty surface, then the rust transfers if it is not sealed and the copper and bronze surfaces will leave a powdery residue on your hands and clothes. The top portion of this bowl is sealed and the lower section is not



11

12 The three finished vessels showing copper and green patinating, bronze with blue patinating and iron and rust patinating fluid. This will hopefully give you an idea of what can be done with a few simple to follow steps ●



12



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PHOTOGRAPHS BY WALTER HALL

# Tools and techniques for drilling pen blanks

**Walter Hall** explains the basics of drilling pen blanks and how to avoid common problems

## WALTER HALL



Walter Hall is a woodturner who has specialised in making pens and pencils for more than 20 years. Based on the beautiful Northumberland coast in the UK, Walter sells his bespoke pens and pencils through local craft centres and via his website.

[walter@walterspens.co.uk](mailto:walter@walterspens.co.uk)  
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One of the first processes required to make a pen is to drill a hole lengthwise through the pen blank in order to fit the brass tube that forms the backbone of the pen. This apparently simple operation is in fact anything but straightforward and gives rise to many problems for novice and experienced turners alike. In this article, I shall identify some of the problems, analyse why they arise and explain how they can be minimised or avoided, but first it is necessary to consider the tools available for the job.

## Drilling machinery

There are two principal ways in which drilling operations can be conducted effectively. The first is to use a pillar drill or a power drill in a stand and the second is to drill on the lathe. I have used both methods and both work well if done properly – I cannot say that one is better than the other.

An important consideration for a pillar drill or drill stand is the chuck travel as this determines the maximum depth of hole that can be drilled. Many cheaper models have a travel of 50mm, which is insufficient



for pen making – a travel of 75mm or more is essential. It is also necessary to have a vice or other holding mechanism to keep the blank firmly in position while drilling. This may be a simple drill press vice or a dedicated pen blank vice but what is important is that the blank is held square to the bit and is unable to move during drilling.

The convention when drilling on the lathe is to mount the work in a chuck mounted on the headstock and hold the drill in a tailstock chuck, thus the work revolves rather than the drill bit. The work may be held in any chuck into which it can be tightened securely; this may be a dedicated pen blank chuck or jaws, a pin chuck or simply the central hole of a standard set of jaws. All that matters is that the blank is secure and running true in relation to the drill bit. A tailstock chuck of the keyed Jacobs type or a keyless drill chuck is used to hold the drill bit.



Using a pillar drill and drill press vice will enable accurate drilling



A dedicated pen blank chuck facilitates drilling on the lathe

## Drill bits

Drill bits come in many shapes and sizes but there are really only four types that are of interest to us as pen makers. Standard engineer's 'jobber' twist drills will do the job of drilling perfectly adequately in most materials but there are better tools for the job. Lip and spur bits have the advantage that the tip design helps prevent the bit from following the grain in wooden blanks while bullet tip – pilot point – bits have a centre point similar to an engineer's centre drill, which guides the bit through the work, again ensuring greater directional control and thus more accurate drilling. Finally, we have dedicated 'pen drills', which are advertised as having advanced tip or flute designs that allegedly enable faster drilling and are usually of longer length to facilitate the drilling of longer blanks. In practice, I find that while the improved flute design does clear away waste material more effectively, they offer little



FROM LEFT TO RIGHT: Jobber bit; lip and spur bit; bullet tip bit – pilot point bit – and Colt pen bit

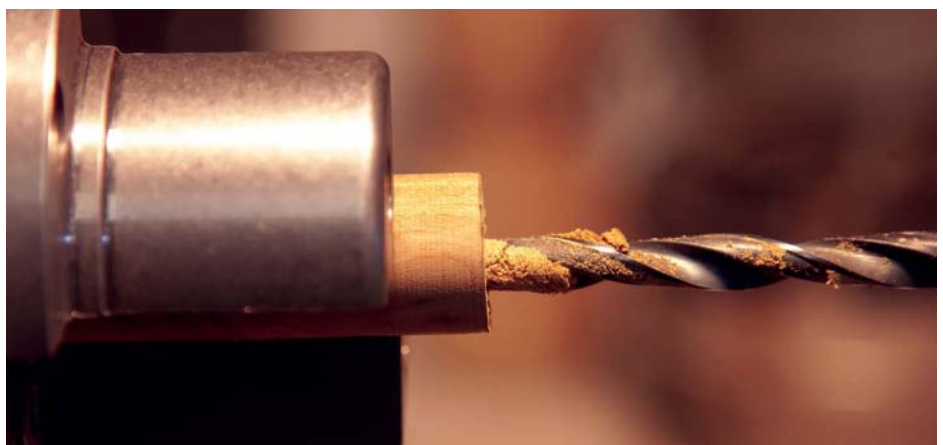
advantage over good quality lip and spur or bullet tip types in terms of speed and the extra length can actually make centring the bit on the work more difficult and introduce flexing problems, especially with narrower bits under about 9mm diameter.

Whatever bits you choose, make sure that they are either kept sharp or treated as consumables and replaced when the edge becomes dull. Using a blunt drill bit is guaranteed to overheat the work, which is a common cause of failure.

## Good drilling practice

The first consideration is speed. Excessive speed will cause greater friction and thus increase the chances of overheating. The harder the material, the slower the speed required. With softer timbers you may be able to safely use speeds up to 750rpm, but harder woods and acrylics require slower speeds. 400-450rpm works well for most materials but if the drill bit starts to get warm, or a squealing noise indicates that heat expansion is causing it to bind in the work, then allow the work to cool and select a slower speed.

Getting the drill properly centred on the work is essential. Not only will this ensure that the hole is central to the blank, maximising the amount of material left around the hole and minimising the risk of splitting, when drilling on the lathe it will also reduce the risk of vibration and 'out of round' holes.



Withdraw the bit frequently to prevent clogging of the flutes

While drilling we need to ensure that the flutes are frequently cleared of swarf, shavings or sawdust as the work progresses. Flutes packed with waste material exacerbate

the problem of overheating and dramatically increase the chances of splitting the blank or the bit wandering off course. The bit should be withdrawn frequently and if the



◀ waste does not fall away of its own accord, it should be removed with an old toothbrush or similar tool.

When drilling, a steady pressure should be maintained so as to keep the cutting tip in contact with the work but without forcing it. If you are drilling all the way through the blank, it is best to slightly reduce the pressure and thus the rate of cut as the bit nears the point of breakthrough. This reduces the chance of splitting or breaking away of material as the bit exits the work.

When drilling on the lathe, resist the temptation to hold on to the chuck as you are drilling. If the bit binds, your grip on the chuck will not stop it from revolving and there is a small chance of minor injury. It is, however, good practice to maintain a light grip on the chuck when withdrawing to clear swarf or on completion of the work in order to prevent the chuck from being pulled out of the tailstock Morse taper. If this happens, the chuck will be left unsupported and spinning on the headstock and centrifugal force may then cause it to be thrown across the work area with unpleasant and potentially dangerous consequences.



Grip the chuck lightly when withdrawing to avoid disengaging from the Morse taper



If the chuck is allowed to disengage from the Morse taper it may become a potential projectile

## Problems, causes and solutions

### The hole runs offcentre in the blank

This problem occurs most frequently in wooden blanks and is usually caused by the drill bit following the grain of the wood rather than the desired path down the centre of the blank. Following the good practice outlined in the previous section of this article will minimise this problem occurring, but selecting a bit with a centre point that will guide it through the work is also important to remember. It is good practice to minimise the effect of this problem on grain alignment by drilling the barrels of two-part pens from the inner end out towards the ends.

### The blank splits while drilling

There are several reasons why your blanks may split while drilling, including attempting to drill too large a hole in a narrow blank, drilling at too high a speed or with too much pressure, or failing to clear the waste from the flutes of the drill bit as you progress. The solutions are self-evident. Alternatively, it may just be that a defect in a wooden blank caused the split and there was nothing you could have done to avoid it. Such is the unpredictable nature of the material we have chosen to work with.

### The blank splits as the drill breaks through the end of the work

Excessive speed and blocked flutes are the main causes of this problem. It happens less frequently with bullet tip bits where the narrow tip breaks through first, leaving the

main body of the drill to open up the hole, thus placing fewer stresses on the end of the blank. One way of avoiding the problem altogether is to cut your blanks slightly over length, drill just short of breaking through and then saw off the excess.

### Material breaks away around the exit hole on an acrylic blank

The cause of this particular problem is the same for blanks that split on exit and the methods of causing this from happening in the future are the same.

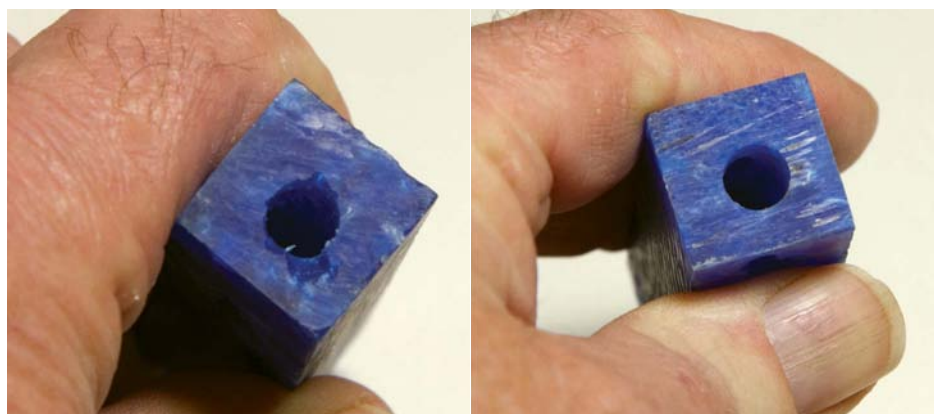
### The hole is oval rather than round

This occurs mostly when drilling on the lathe and is caused by not centring the bit properly on the work, causing it to vibrate and/or run out of true to the rotation of the lathe.

### The hole is wider at the point of entry than it is at the point of exit

As for oval holes, the most likely cause is failure to centre the bit properly at the commencement of the work, but it may also result from carelessness when withdrawing and reinserting the bit to clear the waste. ●

*“As for oval holes, the most likely cause is failure to centre the bit properly at the commencement of the work...”*



Careless drilling may result in breakout. This can be avoided by drilling short and sawing off to length



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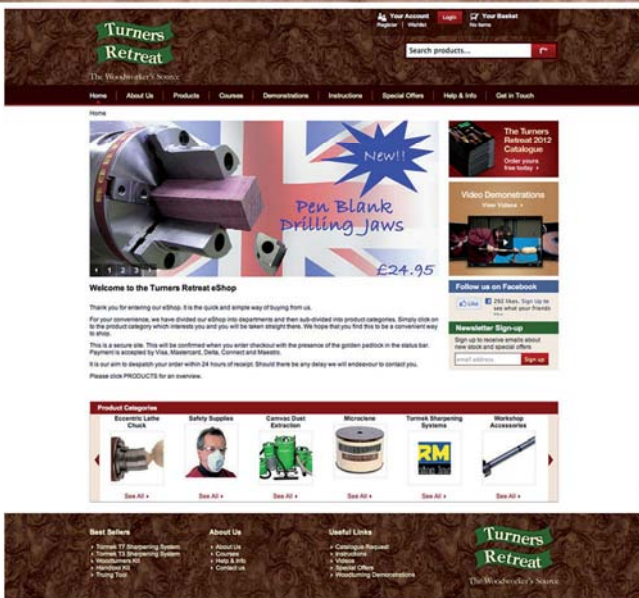


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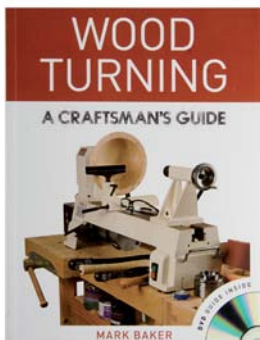


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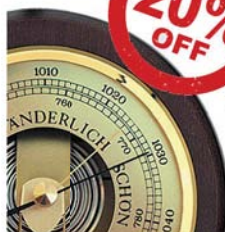
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# Andy Coates in profile

We meet turner and AWGB chairman **Andy Coates**



PHOTOGRAPHS BY ANDY COATES

Andy Coates is based in Beccles, Suffolk where he runs a workshop/gallery called Cobwebcrafts. He is known for his decorative work, but is also a production turner as well as demonstrating and teaching woodturning. In 2006 he was accepted onto the Register of Professional Turners and he is currently chairman of the Association of Woodturners of Great Britain (AWGB).

## Starting turning

Andy didn't start woodturning until 2003; he had a varied background before that due to what he describes as his 'butterfly' attention span. He first trained and qualified as a refrigeration and electrical engineer, then later worked in a UK university, which

led to a science degree among a raft of other qualifications. After this he returned to refrigeration and ran his own small domestic appliance company before moving to London with his wife.

His introduction to woodturning came about on a visit to his in-laws in Suffolk. "On the dining table was a burr oak (*Quercus robur*) bowl. I asked my father-in-law, Terry, where he got it from. He told me he'd made it himself and within minutes we were in his workshop with a square of wood on his lathe and me poking away at it with a sharp pointy tool. I'm still doing that now!", he explains.

A couple of weeks later Terry phoned Andy to let him know there was a lathe on offer in a local store: "I asked him to reserve it and

we drove up and collected it at the weekend. I took it back to London, clamped it to a rickety workmate in the garden and that was it ... bitten. I haven't stopped turning since."

Shortly after this Andy moved to Suffolk, upgraded the lathe, bought a small shed and a bandsaw and spent the next 12 months turning eight hours a day, effectively condensing a decade of hobby turning into a year. After starting out making fairly simple pieces, his work has developed and become more complex: "I suppose, like most people, I began by making very plain undecorated objects. Lots of objects with 'interesting features', natural edges and never with any decoration, but boredom soon set in and after seeing decorated work in *Woodturning*





CLOCKWISE FROM TOP LEFT: 'Australian burl bowl'; pyrographed and bronzed verdigris sycamore (*Acer pseudoplatanus*) round-bottomed bowl; 'Art Quote', series vessel in ash (*Fraxinus excelsior*) with pyrography, stain and lacquer; sycamore (*Acer pseudoplatanus*) platter with pyrography and bronze verdigris

magazine, I began to play with colour and texture. I still make undecorated objects from time to time, usually when the wood has a lot to say for itself, but in truth, it changes all the time. I get bored, so I'm always haring off at a tangent to something new. Occasionally I return to a theme that worked, but always with a fresh enthusiasm and a new tweak."

### Turning style

Andy told us that, like a lot of jobbing turners, he turns a variety of objects: small production runs of everything from spindles and newels, roof finials, furniture parts, architectural and designer's oddities, components for artists, traditional boat builders' tools, antique restorations, etc. But

he also finds time for more rewarding work. "When I'm not doing any of these to pay the bills, I 'play'. It's the playing that I do all the other things for. They allow me time to indulge myself. My passion is for decorated work, but the styles change frequently as I get bored easily," he says.

One of these decorative pieces can take anything from a few days to a few weeks to complete. "The actual turning rarely takes longer than a couple of hours, which is just the product of practice, practice, practice; it's the decoration that consumes time," Andy explains.

### Inspiration and influences

Andy says that he finds it hard to pin down exactly what inspires him as he looks at so many

possible sources. "I wish I knew what inspired me. It would save me a great deal of time! I look at lots of things from modern and traditional art, ceramics, nature, textures and patinations, anything and everything. If you look around your environment there's often some tiny detail that gets you wondering, 'what if I ...?'. The trick then is to adapt and incorporate. There's no fun in copying something."

Although he likes to share ideas with other turners, Andy told us that he is not influenced directly by any particular turner's work. "I make a very conscious effort not to be influenced directly by the work of any other turner. I get bored repeating my own things; imagine how bored I'd get copying other peoples' work! But influence can be lots



of things other than the work they produce. It can be work ethic, commitment, enthusiasm, drive, techniques, all things that can inspire in their own right. If you look at the most successful turners there are a few things they have in common beyond beautiful work, and effort and commitment are at the top of the list.”

### Workshop and tools

Andy’s workshop is the back room of three in an old timber mill office building in Beccles, Suffolk. It’s a few strides away from the river Waveney, which is on the Norfolk Broads, and he tells us it is a lovely spot to work in. “There are water marshes to one side and the river on the other. It’s cold in the winter and cool in the summer. I have an awful lot packed into what is really quite a small space, consequently it’s always a mess, but I know where everything is and it suits me. In an ideal world I’d have a pristine, custom-built workshop with gleaming surfaces and every facility, but I don’t live in an ideal world and, frankly, don’t ever expect to, so I make do.”

There are several tools that are essential to his work. “The vacuum chuck is a godsend.



ABOVE: ‘Art Quote’ series hollow vessel



‘Englishness’ platter detail showing Shakespeare

RIGHT: Beech (*Fagus sylvatica*) vessel, pyrographed, stained and lacquered

BELOW: Pyrographed lidded vessel in reclaimed oak (*Quercus robur*)



### TOP TECHNIQUES

1. Learning to breathe as you cut. So many students concentrate so hard they forget to breathe, and when they do they leave a tell-tale sign on the wood
2. Learning that the bevel supports the cutting edge and guides and drives it. A supported cut is a better cut
3. Practice, practice, practice. Cut six identical blanks and turn the same object six times. Aim for them to be identical. They won’t be. But the last three will probably be nearest and you’ll learn an awful lot in the process. Now burn the first three and repeat until you can do it quicker and with a better number of like objects





'Inspiration', hollow vessel in sycamore (*Acer pseudoplatanus*), pyrographed, coloured and gilded



ABOVE: Sycamore (*Acer pseudoplatanus*) hollow lidded vessel, pyrographed and UV sealed

LEFT: Lidded hollow vessel in sycamore (*Acer pseudoplatanus*), pyrographed, stained and lacquered

## HANDY HINTS

1. Look at the production of any successful spindle turner and consider why they're so fast, skilled and proficient. They've put the hours of repetition in and it's paid dividends. Learn to turn spindle shapes properly. If you never turn another spindle afterwards the skills will not go amiss
2. Try to cut fluidly without stopping during the cut. Your shapes will be better and you'll be able to start abrading from a finer grit
3. Turn for yourself, not for other turners
4. Don't leave the tenon or recess on your work. They are an artefact of the manufacturing process and if you didn't 'design' it in, then it has no place on the finished object. Your work will look better and appear more professional. A cheap homemade jam chuck will enable you to achieve this

It speeds up so many different procedures safely and securely. A recent addition is the Hope articulated DH arm. After years of deep hollowing my shoulder often goes out and the rig takes the strain away. I also couldn't live without my WoodArt pyrography machine. I use it virtually every day, and its power is what allows me to burn quickly and repetitively. The quicker I can complete the pyrography, the better the margin on the piece when it sells. And finally, my Ashley Iles long-ground 10mm spindle gouge. I use it for all sorts of cuts and it gets into places no other tool will do."

## Working routine

When Andy first set up as Cobwebcrafts he worked seven days a week for about eight years. However, this work rate took its toll.

"Your body and mind soon tire of that, so now I don't go into the workshop on weekends unless absolutely pressed to. I do demonstrate some weekends, but it's not every weekend and I'm happy with the balance now. My life is governed by the school run, so everything is done around a daily timetable of drop off and collection of my daughter. You learn to skip lunch and just work through."

Although his days are structured around the routine of the school run, there is still a lot of variety in the way he spends his time. "At 7.45am I drop my daughter off for school. By 8.00am I'm in the workshop. Coffee on, fire lit, and the day begins. If it's a 'play day', I might spend an hour walking about picking up bits of wood and wondering what I could do with it. If it's a production day, it's right to it and I don't stop until I need a coffee. If I have a student in, the day is already



prescribed and goes to a well set pattern. Usually! I work until 3.00pm when I leave for the school run. Sometimes I go back to the workshop, otherwise it's home afterwards and either paperwork, emails to answer, AWGB work or something else usually related to woodturning. And then I cook the evening meal. If I have an evening demonstration, the day is usually geared to prepping for it and being ready to leave in time. I have a morbid fear of being late for things."

#### Highs and lows

The lows of Andy's professional turning career have been the times when work has been quiet with not many orders coming in. "The first thing you do is question what you're doing. Is it right? Is it awful? But you get over it as soon as somebody walks in and buys something."

The highs include being accepted onto the RPT after turning for only two years, and joining the AWGB committee where he is now the chairman. "Other than that the highs have all been related to selling work. It's the ultimate compliment and cannot fail to put you on a high," he says.

When asked to choose the best things about turning, he opted for the variety and the constant opportunities for learning new skills. "Every hour, never mind every day,

can be different. There's always something new to learn, there's always another way to do something, and if you do it for a living, you get to do it every day!"

#### Promotion

Andy predominantly uses word of mouth to promote his work but also uses social media successfully. "I've never felt the need to advertise courses or demonstrations and to advertise my speculative work would be expensive. I use Twitter a lot and have found it incredibly useful as a promotional tool. I was very surprised the first time I sold a fresh-off-the-lathe piece on Twitter. Sometimes I don't even get a chance to photograph a piece because I have to get it packed and posted!"

#### Future plans

Andy hopes to continue to develop his work and maintain the balance between his production turning and his decorative pieces. "Hopefully the bread-and-butter work will continue to come in and allow me to spend time developing ideas and techniques. I just want to be able to continue turning wood. I'm easily pleased!" ●

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#### LIKES

- Learning something new
- Cutting into a blank and discovering something beautiful inside
- Talking to other woodturners
- Watching a student 'get it'
- New tools!

#### DISLIKES

- The 'art vs craft' debate
- People copying other turners' work
- Pointless arguments among turners
- The public when they don't value what we do
- Sweeping up shavings

*"Hopefully the bread-and butter work will continue to come in and allow me to spend time developing ideas and techniques"*



Assorted pyrographed and coloured bowls in sycamore (*Acer pseudoplatanus*), oak (*Quercus robur*) and beech (*Fagus sylvatica*)



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From Left:  
7mm Euro Chrome Pen Blank w/ Glacial Pearl Acrylic Pen Blank  
New Series Chrome Fountain Pen Kit w/ Royal Rouge Lava Acrylic Pen Blank  
Sierra Elegant Beauty Black Titanium/Platinum Pen Kit w/ Polymer Clay Blank





# Three designs for you to make

Mark Baker presents three more turned vessel designs for you to make

## Acacia form with grooved detail

This end grain/spindle grain orientated project is an ideal one for using up branchwood, pre-dimensioned blanks or offcuts. You could just drill a hole in the centre for a weedpot/bud vase or, because it has a grooved decoration on part of it, produce a full hollow form by creating two parts with the join being disguised by one of the grooves. The shape means that, when in two parts, you can hollow it out with a spindle gouge and a standard round-nosed scraper tip or dedicated hollowing tool if you choose. V-grooves are simple to create with the corner of a skew chisel, parting tool or a dedicated point tool. V-grooves are a simple enhancement and devilishly effective, but ensure to get the depth and width correct or the one that is different stands out.

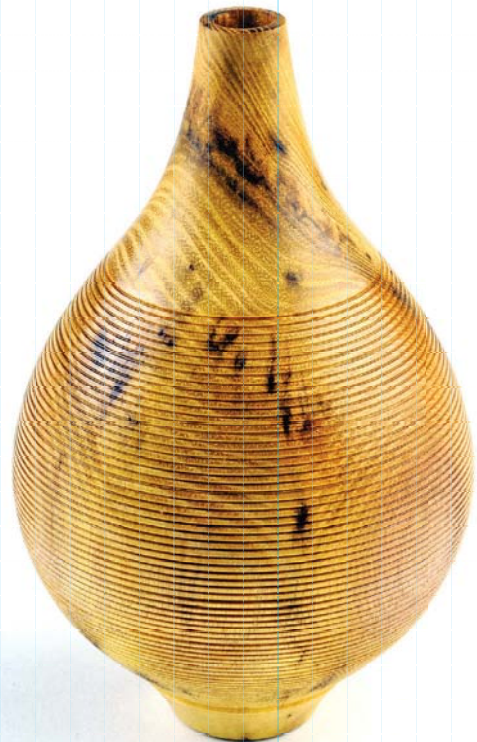
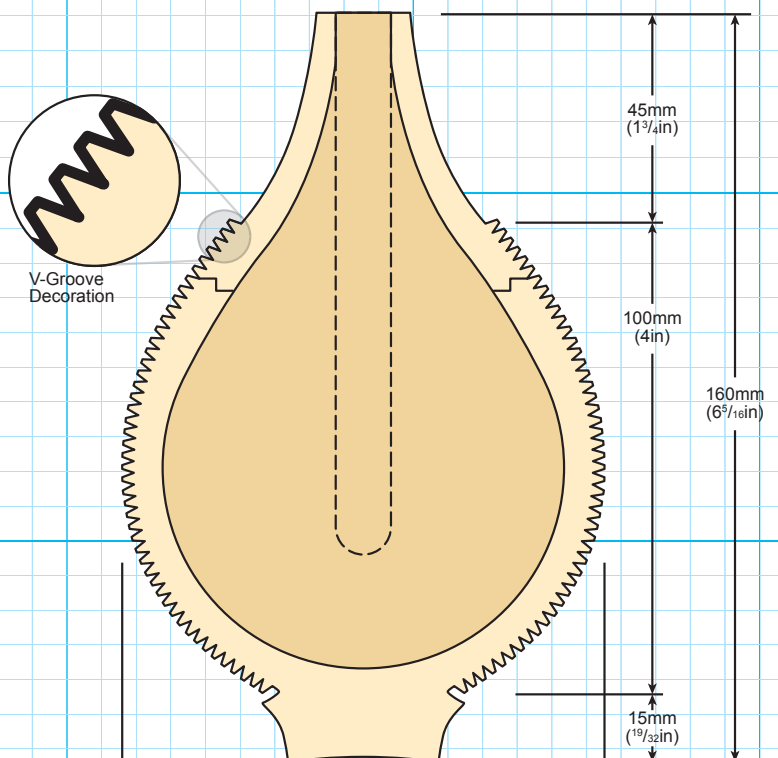
## Walnut calabash-style vessel

This form is a classic and although the shape may be taller, more squat, wider and suchlike, it remains very similar in all cases. The shape is a derivative of a pear/teardrop-shaped squash gourd, the dried outer shell of which was one of the earliest types of storage items. The vessel can be made with or without a lid and they can be made from end grain or faceplate-grain orientated timber. This one has faceplate-grain orientation and is made from walnut (*Juglans regia*). Hollowing it out – especially with a wide opening – can be done using two gouges: one with about a 45° angle and the other about 75–80°. In this case, that did not quite work, so a standard 45° bowl gouge was used in conjunction with a swivel-tip scraper that had a small offset, to allow me to reach the widest inner section.

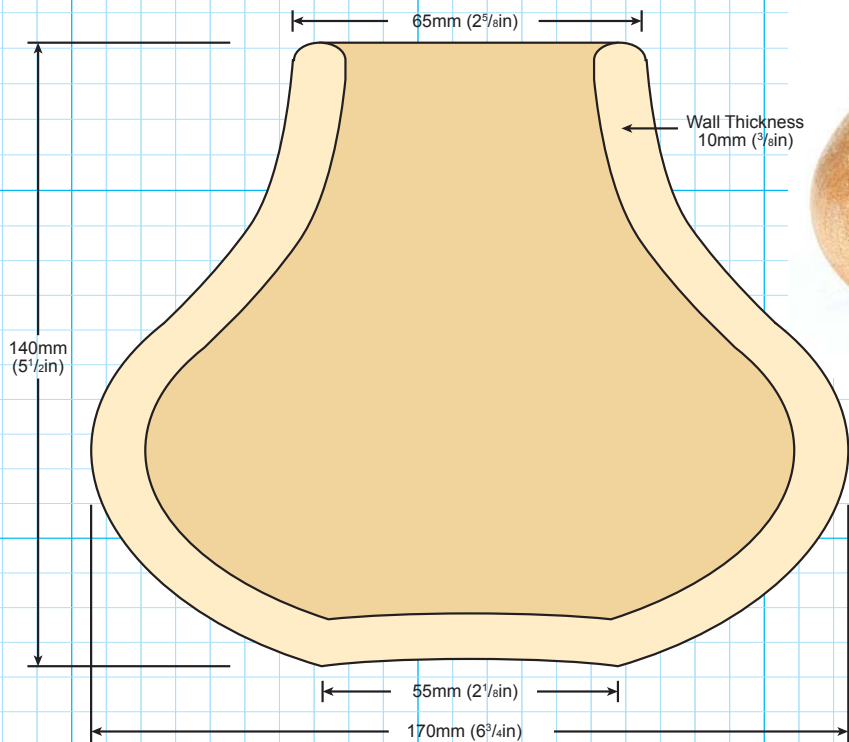
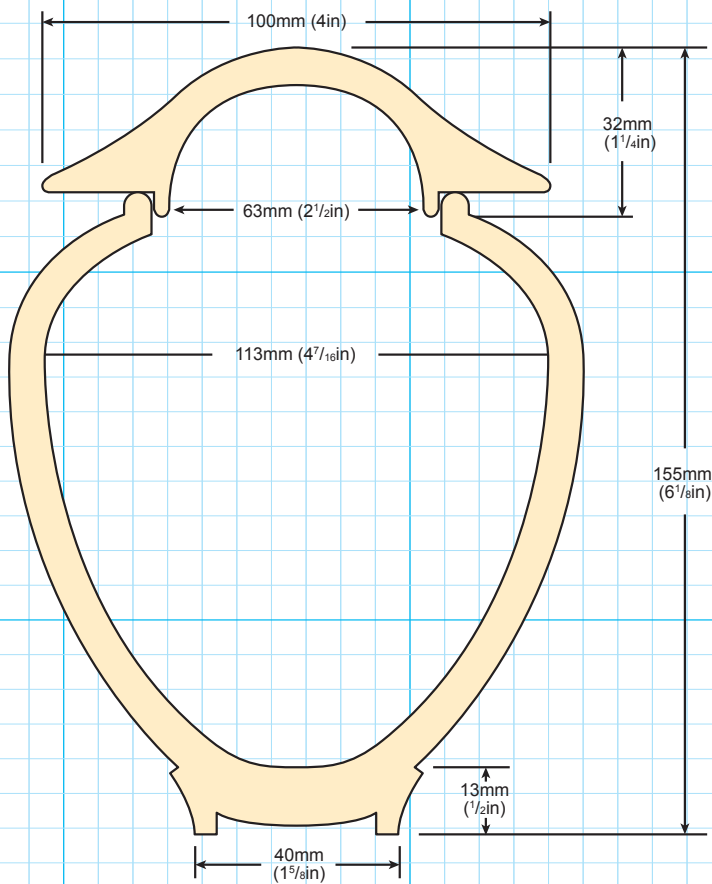
## Figured maple Oriental-style box

This end grain/spindle-turned box from figured maple (*Acer campestre*) is based on some Oriental-style lidded vessels – dating back many centuries and in some cases millenia – I have seen in museums. I love the upstand on the neck and the hat-type lid. The lid nestles without being tight so you do not have to hold the main body when lifting off the lid. The slight quirk near the base creates a tactile and slight visual separation, which in my mind, causes the piece to sit better and look better than just a follow-on bodyline curve. This is where experimentation comes in to find out what you like. The finish is a matt oil finish, but of course, applying a gloss finish would create a different visual effect. Matt oil produces a soft and tactile finish rather than a hard glaze. ●

### ACACIA FORM WITH GROOVED DETAIL





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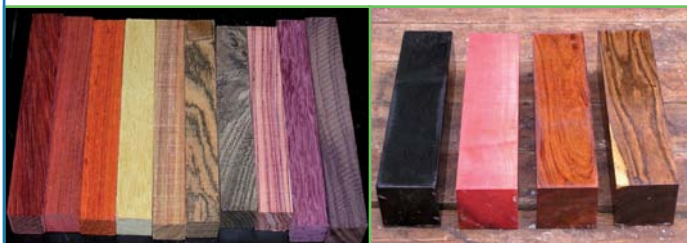
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# What you need to know about cutting holes

In the first of a new series, **Kurt Hertzog** covers the subject of drilling on the lathe

## KURT HERTZOG



Kurt is a professional woodturner, demonstrator and teacher and writes for various woodturning and woodworking publications in the United States as well as writing for *Woodturning* magazine. He is on the Pen Makers' Guild Council and is currently president of the American Association of Woodturners (AAW).

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Cutting and drilling holes in wood, plastic, or other commonly turned material may seem like a 'no-brainer'. Even so, I am surprised at the poor quality of some of the holes I see in woodturning projects. A wonderfully turned coat and umbrella stand is really less than optimal if the pegs aren't at the same angle and equally spaced. I've seen many stools with legs at slightly different angles. They may sit, but certainly are obvious in their shoddy workmanship. Don't limit your thinking to only the turning. What about the rest of the project? I've seen many otherwise stellar Windsor chairs with chip out evidence on the seat where the spindles are inserted. Usually repaired, but still evident to the critical eye. Some holes are cut with a lathe tool but many

are cut with other cutters, either on the lathe or on other pieces of equipment before, after turning, or on other component pieces of the final product. In woodturning, two of the key rules for success are sharp tools and knowing your material. Using sharp tools with a light touch is always a winning strategy. I can't think of an instance when following that will let you down. Knowing your material is also always important. Be aware of and plan for any limitations of your material, its orientation and the best methods to work with it. Far too many turners will drill or cut into wood, oblivious to the characteristics of that species or particular material. Even knowing, they may pay no attention to the grain orientation. For the opening topic of this new series, we'll touch on both of those key points again as we generically explore cutting holes in turnings. We'll include drilled holes and cut holes of regular shape. Down the road, we'll deal with carved pockets, shapes, piercing, and irregularly

### SAFETY

Throughout the discussion on creating holes, the use of safety glasses or a face shield as appropriate along with dust extraction and filter masks as needed is assumed. The appropriate personal protective equipment should always be the first thing you do before you begin to work

shaped holes. While I won't be covering a lot about our turning tools and the methods you'd use with those, I'll be covering other things that will certainly get you thinking about cutting and drilling holes in general regardless of the tool and piece of equipment.



PHOTOGRAPHS BY KURT HERTZOG

On the lathe, it is so easy to make a diameter hole with any wall taper provided it is on the centreline. Off the centreline becomes a bit more difficult

## Think first, cut second

I am not being facetious. Depending on your hole's end use, size, orientation with respect to the grain, equipment available to be used, stage of completion of the project, size and shape criticality, function, positional accuracy required and more, you'll be directed to different tools and methods. For example, the perch hole and bird entry hole in the side of a turned birdhouse. Properly located and drilled into the blank using a drill press before turning is far



safer and more effective than after turning and hollowing. Drilling into end grain lends itself to different cutters than those used when cutting into face grain or cross grain. Of course, wet wood drills and cuts far differently than drier wood. One of the most important considerations is the size and criticality of the hole. A 2mm hole is far easier to accomplish well than a 30mm hole. Thinking first about these various considerations will help you be successful. Plan on the various holes you'll need in your turning and when it is optimal to create them. On occasion, the best time is a bit out of the usual sequence but it is when you can get the best grip on the material for the process you'll be using. Sometimes additional fixturing is needed to perform a safe and top quality job. I have found the time spent creating the proper fixturing when needed is far shorter than the time redoing the project because you've messed it up. Believe me, I do speak from experience. Thinking through the entire project, knowing when and where the various holes are needed and planning for the best time to execute them is worth the time and effort. There are times certain holes can be best done prior to turning, during turning, or when the turning has been completed. Perform them at the various times as needed for the best final result.

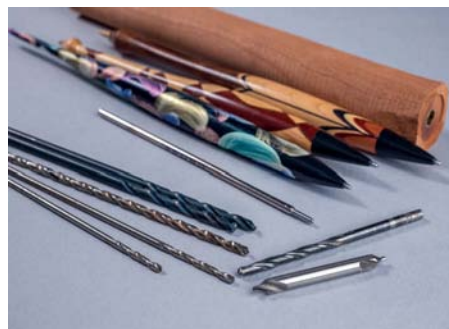
### TIPS FOR THINK FIRST, CUT SECOND

1. Does the material lend itself to the holes needed or will it be troublesome?
2. When is the best time and what is the safest, most secure workholding method for the particular cutting process?
3. Is the size, shape, position, fit, direction, depth critical and planned for?
4. Will the grain orientation cause me problems with any of the above needs?
5. Is it a through hole or a blind hole? Can I properly back up a through hole for a clean breakout?
6. Do I have the ideal tool and equipment for the job?
7. If not, can I borrow, rent, or buy the proper tool or equipment for the task?

## Think grain

This was a topic in the past, so you may want to review that to refresh your memory – see issue 255, July 2013. We'll hit just some of the highlights here. One of the first things you'll need to consider is the orientation of the grain. Are you cutting into face grain, end grain, or some cross grain condition? Depending on the grain orientation, you may be better served with a drill, sawtooth bit or rotary hand tool with a cutter. In a perfect world with the assumption you have

the proper size in either tool, you will usually use the standard twist drill for end grain and the sawtooth – Forstner – bit for face grain, regularly shaped round holes. With a cross grain situation, you can select one or the other based on the degree of angle of the grain and the material. How dense is the material? Will it cut cleanly or be soft, mushy and produce a ragged edge regardless? Does the hole need to be a finished hole or is it an in-process hole? Is it a through hole or a blind hole? If it is a blind hole, is the depth critical? What about the geometry of the bottom of the hole? Can it be the commonly available twist drill configuration of 118° or 135° or does it need to be 'square' at the bottom? Grain will have a tremendous effect on all of these issues. Depending on the grain orientation, hole diameter and hole depth, the drill can be misdirected along the intended path. Deep drillings with small diameter drill sizes are very susceptible to following the grain direction or just plain wandering. A great example might be drilling a hole for the brass tube used in pen kits.



When drilling larger sized holes, it is often better to start small and do progressively larger drilling rather than attempt a single large hole in one pass

It is a through hole, but susceptible to blowout at the exit end depending on material. For the most part, it is an end grain drilling but there is occasion where a face grain or cross grain orientation is selected for unique appearance. The size, while not especially critical, does have importance. The amount of space between the outer diameter of the tube and the inner diameter of the hole will be important for how much space there is for glue. Too tight and you risk squeezeegeeing the adhesive off as you press in the tube. Too loose and you have a large gap to fill. Drill too far ahead of the actual tube gluing process and you risk having the hole change shape with moisture changes causing difficulties with tube insertion later on. Another example would be the implications with chair rung drillings or other holes that will require adhesives, controlled fit and perhaps the hole bottom geometry. Too loose is sloppy with a visible perimeter line and potential glue visibility. Being too tight can become a piston when trying to glue.



Even the most modest priced countersink will do a better job of a chamfer than attempting to use a twist drill as this turner did



Depending on your final use, you may need a bottoming twist drill hole, a through hole, a tapered through hole, or a 'flat' bottomed hole



Very effective for clean entry in face grain, the outer perimeter scoring cutters engage after the pilot point and just before the peeling cutters



With the scoring cutters leading the way, the peeling cutters can act just like a bench plane when drilling into face grain





A thickness of packing tape on the top and bottom surfaces seems to help minimise damage as does always having a sacrificial breakout backing block. The piece is clamped down to prevent spinning if jamming of the blade occurs

### TIPS FOR THINKING GRAIN

1. For face grain drillings, a sawtooth bit is usually best suited because of the scoring process performed by the cutter outer diameter
2. For end grain drilling, a standard twist drill bit will most often work well provided the hole size is not too large
3. For larger end grain hole drilling, drills are not available or extremely expensive so a sawtooth bit is brought to bear. Drill slowly and clear the debris
4. For twist drills, it is usually better to 'step up' the hole size by using progressively larger bits than to drill a single, large hole immediately
5. Proper support for the workpiece is critical for location, size and quality
6. Finished surface holes require special care both at entrance and exit surfaces

## Sharp cutters are key

Sharp tools and light touch are keys to success. Dull cutters of any type will do a poor job. Without sharp tools, everything becomes a scraper. You'll use too much force, generate excessive heat and create an end result that is far less than optimal. There are so many different cutters you'll need in your workshop that it will be impractical to cover all sharpening, but let me touch on a couple.

There is a more in depth sharpening discussion in issue 261. You should have developed your skills at sharpening your lathe tools, but don't be afraid to touch up whatever you are using before you begin cutting your hole. Take the opportunity to refresh that edge often should the hole involve extended cutting. This is particularly true when doing deep drillings with a sawtooth bit in end grain. The only reason to use a sawtooth bit in end grain is the high cost of twist drills in larger sizes. That along with the difficulty in chucking larger drill sizes.

Sawtooth bits are very modest in price for larger sizes by comparison. The advantages of sawtooth bit operation is lost when drilling end grain. In end grain, the peeling cutters of the sawtooth bit are continually cutting short little stubs of wood rather than peeling the layers of face grain. That works the cutters extremely hard. Stop and touch up the tool with your hone rather than continually pushing harder. Letting the bit cool and refreshing the peeling cutter edges is worth the effort. You'll have less degradation of the tool, less smoke and far better results.

I know there are a few rare exceptions, but for our purposes here I don't believe you'll run into any problems with using a tool that is too sharp. For sharpening, let's focus on the two most commonly used drill bits that woodturners use; these are standard twist drills and sawtooth bits. Drills of any sort as purchased aren't necessarily sharpened properly or well. I don't possess the skills to freehand sharpen drills on a grinder as some do. Years ago, I purchased a Drill Doctor



My drill sharpening machine sharpens 118° and 135° drills from 2.38mm to 19mm quickly and repeatably



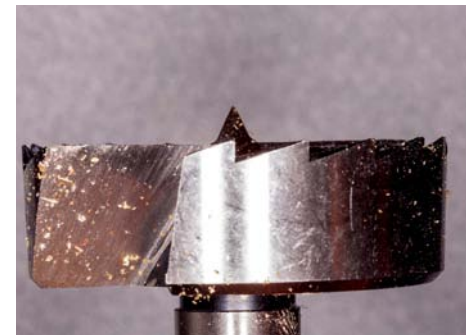
Sawtooth bit sets are available at very modest cost. Larger or speciality sizes are usually quite expensive

to sharpen my drills. That drill sharpening machine, equivalent, or other fixturing devices for a grinder can aid in sharpening twist drills. The model that I own will not only do very small drills, but also rather large diameters. It is capable of both 118° and 135° drill nose angles. It can't deal with many of the speciality, stepped nose grinds or brad point bits, but it accomplishes what I need quickly with accuracy and repeatability well beyond my freehand skills.

Sawtooth bits are usually a turner's downfall. They are often marginal quality and



Discounters often have replacement drill sets for a modest price. Depending on your needs, it may be a lower cost alternative to a sharpening machine



A sawtooth bit does three functions in sequence: the centre point provides guidance; the scoring perimeter slices the face grain and peeling cutters slice the material out

used improperly. Because they often come in sets at a bargain price, they are economy steel and not always as sharp as they need to be. Beyond that, the end user will run them far too fast, overheating the bit and dulling it quickly. Even sawtooth bits of moderate quality can easily be sharpened using a diamond hone. The skills and equipment needed are minimal. The key is using the correct technique and sharpening often. If a sawtooth bit becomes dull, you'll have great difficulty sharpening it. If it is touched up often to maintain sharpness, you'll be able



to touch it up quickly and provide quality cut holes. The outer perimeter of the sawtooth bit should never be sharpened by the home user. These are scoring knives and will last the usable life of the cutter provided it isn't abused. Messing with the scoring knives on the outer diameter of a sawtooth bit changes the hole dimension, alters the effectiveness of the scoring function and more often than not, ruins the cutter. Don't ever touch the outer diameter scoring knives! If you do manage to use – or abuse – the bit to where the scoring cutters aren't effective any longer, it is time to replace the bit. If it is a costly bit worth resharpening, let a professional touch up the scoring knives.

It is similar to sharpening a fine hand saw and is usually best left to the experts. The only place you'll need to sharpen is the peeling cutters inside the outer diameter.

Sharpen those peeling cutters with your diamond hone – never hone on the angled top surfaces of the cutting edge. Always hone on the long flats leading to the peeling cutter edge. You'll be able to refresh the edge by honing this flat surface. In order to keep from rolling the cutting edge, keep the hone flat to this surface as you sharpen. That will keep the peeling cutter edges at their original relief angle and coplanar. It is the same concept and method used when sharpening spade bits. On the topic of spade bits, they have little to no use in woodturning holes. Even with their scoring cutters, they are brutal in their entry and exit holes and function much like a scraper. Spade bits are ugly in face grain and useless in end grain. They may be cost attractive, but are best left to creating holes in floor joists for passing water pipes or electric lines.

### TIPS FOR SHARPENING

1. Always touch up your tool sharpness before it begins to cut poorly
2. Keeping your cutters sharp by touching them up often is far easier than sharpening a dull cutter
3. Grinding cutting tools should be a cool process without discolouration or need for quenching
4. Most twist drills, spade bits and sawtooth bits are carbon steel so overheating whether from sharpening or abuse can cause permanent damage
5. A set of diamond hones is one of the handiest sharpening touch up tools in the workshop
6. A drill sharpening tool or fixture can be a good investment over the long haul



Handy to have in the workshop at a very reasonable cost, a set of diamond hones will aid sharpening everything from your skew chisels to sawtooth bits



The outer perimeter scoring cutters perform valuable work on face grain. Most turners should never attempt to sharpen them



A diamond hone held flat to the front surface leading to the peeling cutter edge while sliding the hone back and forth will help keep your sawtooth bits sharp



A diamond hone can sharpen a spade bit nicely, used in the same fashion as for a sawtooth bit: flat on the surface leading to the cutting edge on both sides



Even with the OD edge of the blade engaging first, a spade bit is a scraper and is brutal on the entry and exit hole surface finishes. Avoid using them in woodturning

## Speeds and feeds

Much like setting the speed on your lathe based on the size, shape, weight, tool being used and finish desired, the speeds and feeds of your cutter creating your hole are extremely important. Too fast and you'll overheat things while muscling your way through. It dulls cutters, burns material and often blows out on the far side. Too slow and it doesn't always make the optimal cut. It rips

and tears more than cuts. Exactly like the size of your blank being turned appropriately, the surface speed of your cutter needs to be considered. Like all cutting, the surface finish and effectiveness of the cut is based on the surface feet per minute of the cutter past the material being cut. This is true whether you are rotating the cutter or rotating the work. RPM really isn't the issue to be concerned

with, it is surface feet per minute. The SFPM of the cutting edges is all important. Cutting a hole with a 6mm sawtooth bit can be run at a far faster RPM than using a 100mm bit. Of course, this is all tempered with the material, orientation, workmounting and desired finish surface.

Slower isn't always the answer. When drilling, feeds are just as important. I always



recommend including the process of 'breaking the chip'. The drilling process I use is to advance with steady yet reasonable force, then relax the force and retract the cutter slightly; this will allow the chip to break and the cutter to exhaust the debris. Without the flutes being clear, the debris can plug them and cause burning at the cutter edges. The quality and finished size of the hole are at risk. If needed, retracting your cutter and clearing the flutes is always worth the time. Even with good backing support when cutting a through hole, good practice is to relax the drilling force when nearing the breakthrough point. This will improve the exit hole finish

regardless of the backing support provided. If you are ever in doubt of the proper speed and feed, take a piece of scrap of the same material and test out your best guess. Cutting a few holes in the same material and the same orientation will usually give you the best answer. A quick view of those holes can tell you almost everything needed. Burnished on the inside, RPM too high; rough and torn up on the inside, RPM too slow. Breakout on the bottom, too much force approaching the exit and/or insufficient backing support. Surface entry torn up, use a sacrificial top board or tape to keep fibres in place and use slower feed and lower entry force.

### TIPS FOR SPEEDS AND FEEDS

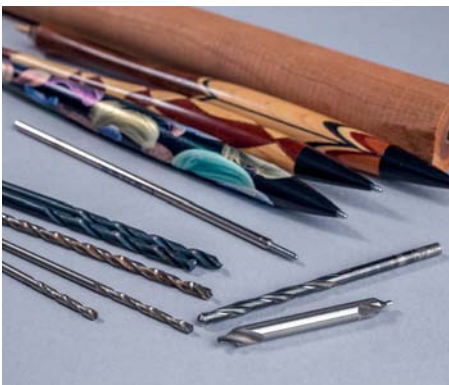
1. When in doubt, practice on a scrap of the same material and orientation
2. Breaking the chip and clearing the exhaust mechanism is worth the time.
3. Smoke is rarely a good sign!
4. Don't worry about RPM, surface feet per minute of the actual cutter surfaces is the important factor
5. Material, depth, diameter, cutter type, and workholding all impact proper speed and feed
6. If you are to err, err on the side of slower than needed rather than faster



The surface feet per minute of the cutting edges at the same RPM is quite evident between a 6mm and 8mm sawtooth bits



The exit hole in softwood shows the tape used to assist with the process. Force reduction just prior to breakout will allow for the breakout to be a clean 'plug'



Drills are available in a myriad of forms including centre drills, standard twist drills, short fluted long drills and full length fluted long drills



Dense, wet, or oily woods are troublesome with plugging the flutes. For the best results, it is wise to stop, clear the flutes and then continue the drilling



Rare in woods, blow out at the exit is common in brittle plastics. The easiest solution is to leave sufficient stock for cutoff to the unaffected area

## Finished size accuracy and position

When you select a drill from an index or a sawtooth bit from the box, you'll take it based on the size of the hole you desire and the marked size of that bit. If the size of the hole is approximate or you'll be turning a piece to fit that hole, all is good. If the hole needs to mate with something of a precise size, check your cutter carefully with an accurate measuring tool. Even if you are using high-quality drills or sawtooth bits from one of the quality producers, your dimensions are likely to be off a bit. Not only will the material and method have an impact on your final hole size, but

certainly the manufacturing variation from the marked size can also cause a problem. Not usually a radical difference from the indicated size, there is always a tolerance from the best quality to the lowest quality. Usually the less expensive the cutter, the larger the variance from the indicated size often is. Not always but if size is important, select the proper drill or bit based on your measurement of the actual cutter tip rather than the shank. Better yet, measure the size of the finished hole using that bit in a test block. It isn't often that a woodturner needs a precisely dimensioned

hole, but accept that most cutters aren't always as they say. Also, the material itself will impact the final dimension. Regardless of the drill size, measure the finished hole if size is that important to you. If the position is important, using a centre drill to locate the starting point is very important. A set of machinist's centre drills is inexpensive and a valuable addition to your kit. By design, they will create a small starting location precisely where you locate it and provide the drill or bit a starting point to prevent wandering on the start. I always use them on the lathe and



often in my drill press. Whether face grain, end grain or in between, the time and effort involved in providing a good start location is worth doing. I keep a medium-sized centre drill mounted in a spare drill chuck with a Morse taper at the lathe for quick use. When a different size centre drill is needed, I will take the time to retrieve it and mount it for use.

Depending on your need for positional accuracy, you may be laying out the position(s) with layout tools or patterns. Your layout tools might be as simple as a ruler, compass and a pencil or as complex as a furniture maker's layout tools. For large radius curves, such as the radius of the spindle holes for a Windsor chair seat, I've

used a push pin, string and golf score pencil. In order to precisely locate the centre of a hole, a centre punch or scratch awl may locate the exact location prior to the centre drill. You may be able to use the centre punch mark to begin your drilling or use it to locate the centre drill. Either way, the goal is to create a mechanical start point for your subsequent drilling. This is especially key when creating any geometric or repeating pattern. The human eye has the ability to detect minor variations in size or position in repetitive patterns. Turning the finest set of Shaker pegs for a hallway coat rack will certainly be lost if they aren't all mounted on the exact same line, angle and spacing.

*“Either way, the goal is to create a mechanical start point for your subsequent drilling”*



The true size of a drill is the measurement across the cutting flutes. It isn't the stamped size or the shank measurement. When important, measure a drilled test hole



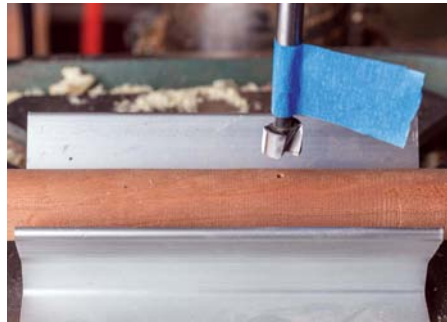
Very rigid and short, especially the drill portion, machinist centre drills are used to create the starting point for your subsequent drillings. It prevents wandering



Using a centre drill to create the starting point, even a long, slender drill, such as this 3 × 150mm will start exactly where desired



When drilling round stock in a drill press, always use a 'V' block to safely hold the work and a centre drill to spot your starting location



A chair spread hole being drilled with a sawtooth bit. Notice the starter drill hole and the depth indicator with the blue tape 'flapper'



Handy for drilling holes on a lathe, a drilling fixture provides angle setting, depth control and rotational position when used with the lathe indexing lock

## Conclusion

Finally, a few words in anticipation of the emails to the Editor asking 'what on earth does an article on cutting holes have to do with woodturning?' My answer is 'everything'! The most accomplished turner with poorly executed holes, a finish with runs in it, or sanding scratch marks under a superb finish hasn't accomplished their best result. Every process you do in the creation of your work, whether a bowl, lidded box, ornament, pen, chair spreader, stairwell baluster, or any other turning, is important to the end result. Bragging about turning your ornament with

your skew chisel really isn't impressive if your hole for the hanger is offcentre or holes for your chair back spindles are chipped out on the perimeter edges, is it? Attention to detail is what separates the truly accomplished turners from the 'wannabees'. Everything from the selection of the project and material to the presentation of the finished work is an important aspect of woodturning. As said earlier, it may seem like a 'no brainer' but it really isn't. With just a little attention to detail, you can be certain that these necessary functions add value to your end result rather than being a detriment. ●



Lots of effort creating a unique blank. Far too little effort in layout and drilling the holes. Attention to detail isn't that difficult and it pays dividends

## TOP TIPS FOR SIZING AND POSITIONING

1. Virtually all cutters have some small manufacturing variance from the indicated size
2. When measuring cutters, the absolute accuracy of the measuring instrument isn't important if you use the same instrument to measure all of the items involved in the fit
3. The material and method can have an impact on the finished size
4. When the finished size is critical, measure a test hole created in a scrap of the same material
5. Your headstock indexing system can be a valuable tool for rotational position holes
6. A set of centre drills is a wise and modestly priced investment



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# In the workshop with... Brian Mills

We find out more about woodturner Brian Mills

**B**rian Mills was born in Sheffield during the late 1940s, into a small family business of cutlery, who manufactured quality canteens of cutlery and pen knives, essentially using basic hand tools and simple machinery, thus his interest in general engineering was kindled at an early age. In the late '50s Brian's family moved to Berkshire, where he embarked on a six-year engineering apprenticeship and subsequently became a tool maker. In recent years, he specialised in using CNC machinery to produce metal moulding tools for the plastics industry.

Engineering is also one of Brian's hobbies and he has a fully equipped workshop attached to his house. After retirement and free from the restrictions of operating CNC machinery, by chance, Brian was introduced to woodturning and found he enjoyed it very much indeed. Brian discovered he could create objects using his imagination and engineering hand skills once again.

## How, when and why did you start turning?

I started woodturning in 2010 after a lifetime working as a toolmaker. I had completed a six-year apprenticeship and eventually progressed to CNC engineering in the plastic mould-making pharmaceutical industry. After being trained in the necessary programming, I found my engineering and toolmaking skills were redundant.

I have a metalworking lathe and with the help of my brother-in-law, who was already woodturning, I adapted the lathe to enable me to try my hand at woodturning. With an old chair leg and some borrowed tools, I enjoyed it very much as I was able to use my skills again. I then bought my first wood lathe – a Nova XP – which started me on the road to making plenty of 'firewood'. I soon realised that I needed professional help, so I joined my local woodturning club – Berkshire Woodturners – and with their help I gradually reduced my pile of firewood!

## What and who are the greatest influences in your work?

Jennie Starbuck for her fine wood piercing, Dennis Keeling for his segmented work and David Springett as he puts a lot of innovative thought into his work and jigs.

## If you were to offer one sage piece of advice to someone what would it be?

Be creative and if you do not succeed, you have learned a valuable lesson in how not to do it.

## What music and which book are you currently into?

My music is in the '60s and '70s era, when you could actually hear the words! Abba and Katherine Jenkins are among my favourites today. I don't read much, instead I prefer to be designing and making a new turning project. Books are mainly used for my next project.





### What is your silliest mistake?

I have made many mistakes, one of the silliest was running the lathe too fast while sanding and pressing too hard, resulting in the loss of finger prints!

### What has been your greatest challenge?

My greatest challenge was to produce a uniform thin walled – 0.75mm – hollow perfect sphere, which I finally achieved after many attempts.

### Name one thing on your ‘to do’ list

A thin walled, hollow, segmented perfect sphere.

### Tell us about the piece you are currently working on?

An oversized segmented cup and matching saucer – as useful as a chocolate teapot, but can be used as a sieve!

### What is the one piece of equipment or tool you would not be without and why?

This would be my sphere and hollowing jig, which I designed and manufactured. I have seen other sphere jigs but none that would achieve a very thin walled internal profile.

### If you could change one thing what would it be and why?

There is very little I would change at the moment; every time I start another project I am always learning something new.

### What is your favourite type of turning?

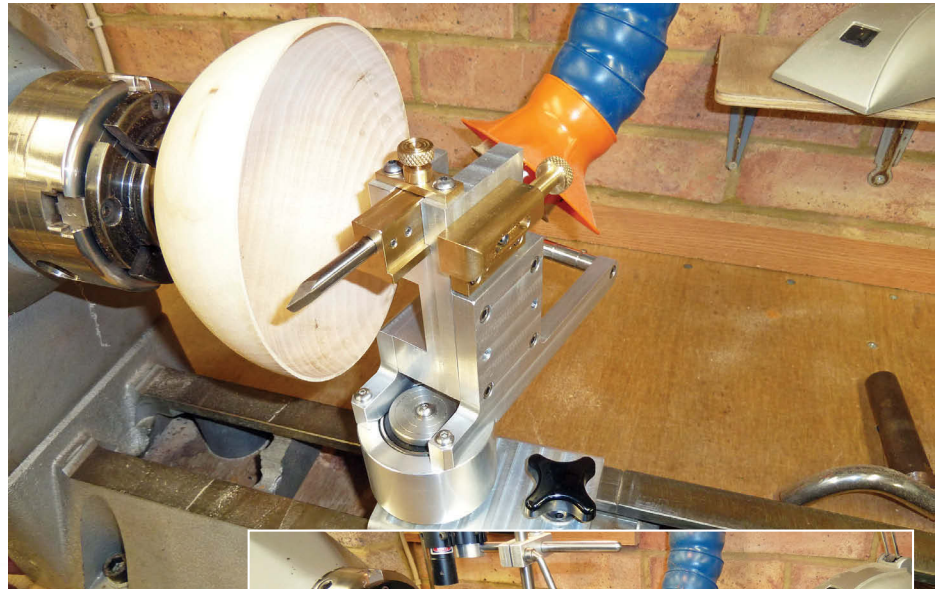
Using segmented hollow turning to create unusual artistic pieces.

### If you had one wish, what would you wish for?

To continue woodturning for a number of years to come.

### If you could have one piece of equipment, what would it be and why?

As a retired tool maker I already have all the necessary tools, machinery and equipment I need. The item I was lacking was a proper sphere and hollowing jig, which I have now designed and developed from scratch. I was so pleased with the finished product I subsequently manufactured five identical units, which I intend to sell.

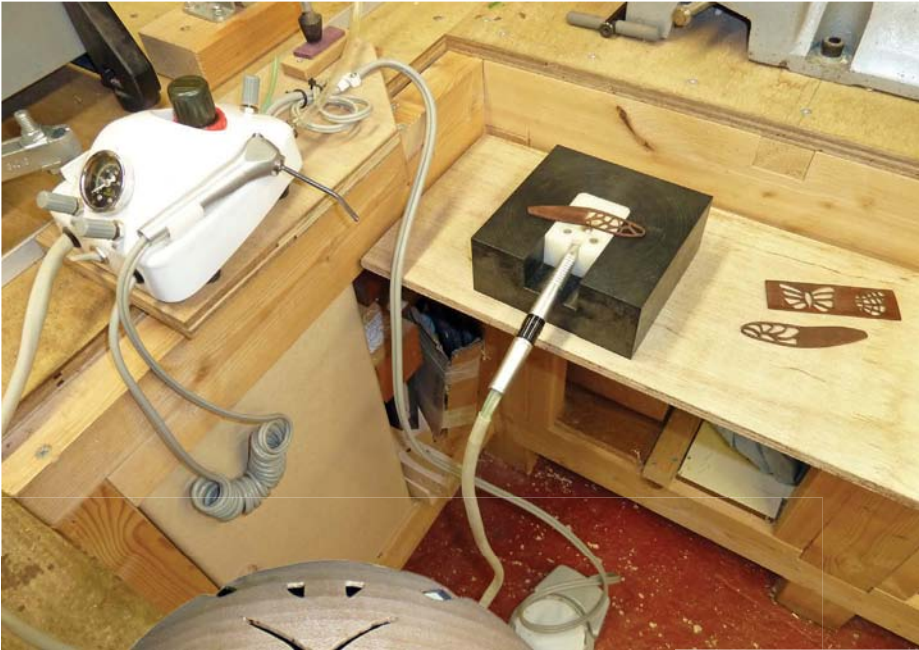


ABOVE & RIGHT: I developed this tool to produce an even thin wall thickness. Each pivot has a bearing. The toolholder slides on two roller bearings



‘Honey Bee with Pots’, bubinga (*Guibourtia demeusei*) and pau amarello (*Euxylophora paraensis*)





ABOVE: Brian uses a dentist drill as a piercing tool. He purchased a Power Crafter piercing tool and found this to be an excellent product

LEFT: Brian's latest turned sphere



### HANDY HINTS

1. Don't be afraid to ask questions. Most segmented woodturners are givers/teachers by nature. In fact, once they start, you may have trouble shutting them up
2. In segmented work, keep your tablesaw and/or chopsaw blades sharp. I have two blades for each saw and rotate them often
3. Utilise non-traditional methods, i.e. duct tape clamping for irregular shapes or hot-melt glue mounting. I learned these methods from Malcolm Tibbetts
4. Attend symposiums. Join a club. Practice, practice, practice
5. Don't be afraid to try something new or try to improve a technique. Just because I do something one way doesn't mean it's the best way. You're only limited by your own imagination
6. Share your knowledge with others

### LIKES

- Segmented turning
- Piercing thin walled shapes
- Being creative

### DISLIKES

- Turning green wood
- Selling product for peanuts



Another sphere being turned with the help of Brian's handy jig



Brian's sphere turning jig in action







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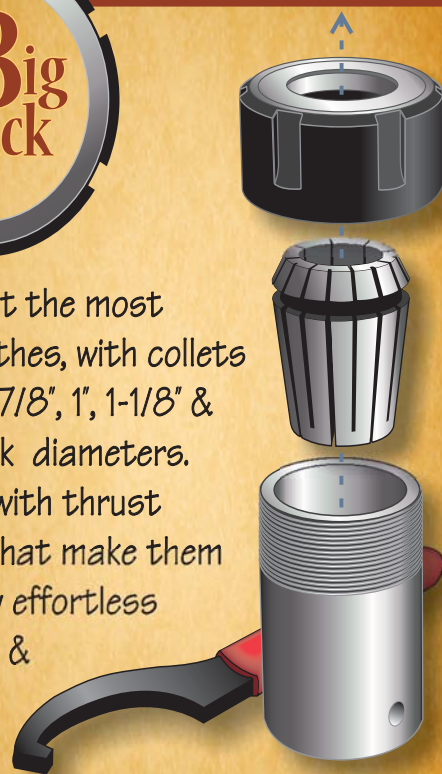
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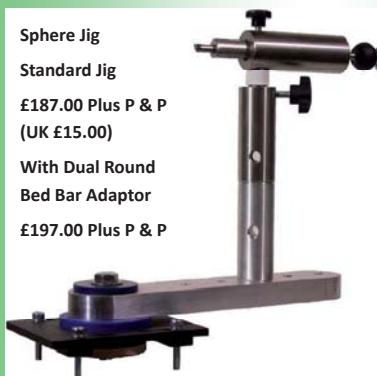
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# Laminated fir ball

Guy Lautard takes us through the steps for making a laminated fir ball

## GUY LAUTARD

Guy is a semi-retired writer and 'a self-taught machinist of sorts', as he puts it. He lives in a small town on Canada's west coast. He has written nine books and many magazine articles. He belongs to the local woodworking club in his area and is getting back into woodturning after a hiatus of several years, 'with lots of ideas and lots to learn.'

guylautard@dccnet.com

I made this 240mm diameter ball from Douglas fir (*Pseudotsuga menziesii*) about 20 years ago. I bought some nice 2.4m long construction grade fir 100 × 50mm lengths. I figured this would be ideal material from which to make the ball. I used my lathe only as a workholding device. I did the cutting with a ball-nosed router bit in a die grinder, held in a radius turning fixture. I made the radius turning attachment from medium density fibreboard (MDF) and it worked very well. The cup chucks were simple items, made from scrap plywood. As I recall, I made them about 125mm diameter.

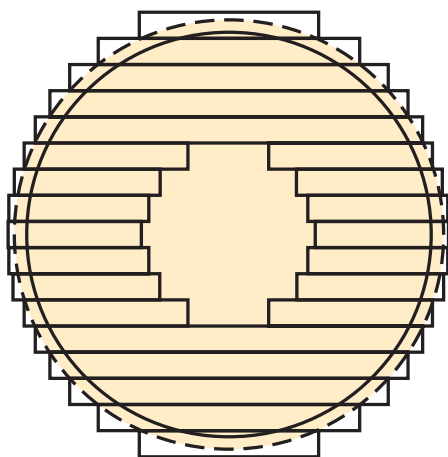
I devised and made clamps to clamp the wood strips from which I made the ball, so that they could be glued up into very flat boards of the desired sizes. My

clamps worked well and cost very little.

The ball was made from strips of fir, sawn to about 10 × 19.5mm. These were then run through a planer/thicknesser to bring them to a uniform thickness of about 8mm – I measured their thickness with a good dial calliper and used the actual dimension in my figuring. For convenience here, let's say it was 8mm.

You might be able to produce suitable strips straight off a tablesaw, without surfacing them at all, but I think sawn surfaces would not give the fits between strips that my approach produced over almost the entire surface of my ball. These strips were then cut to various lengths to suit their intended place, then glued up into small flat boards 8mm-thick and of various widths.





## GLUE AND GLUING

- I used Lee Valley's '2002 GF' glue on this job. Plastic knives from fast food restaurants make great glue spreaders

## Flat clamps

I devised an effective clamp for gluing up my narrow strips into thin boards, and made five of them. Each clamp consisted of two 230 × 305mm rectangles of 16mm-thick MDF. Five 12.5mm diameter holes were match-drilled at a uniform 19mm in from one edge of a pair of these MDF rectangles and four slots – staggered between the five holes – were drilled, chiselled and filed out – see photo bottom right of page 79.

One of these clamp halves was placed on the workbench. Pieces of dowel about 50mm long were placed in the holes, a layer of thin polyethylene plastic sheeting – a heavy coat of paste floor wax on the faces of the MDF plates might also prevent glue sticking to them – was set on the piece of MDF, and the first piece of wood was put into the clamp. Glue was applied to the mating edge of the next strip of wood to go into the clamp, and so on. When as many strips as needed were in the clamp, a second piece of plastic sheeting was put on top of the strips and the top half of the clamp was put in place over the dowels. Four dowels were then put into the slots.

Strong nylon twine was then wrapped from the protruding ends of the fixed dowels to the dowels in the slots and back again, working simultaneously on both sides of the MDF plates along the full length of the clamp. The twine was then tightened up severely and tied off. Two wooden hand screws were applied from the ends, over the twine, to clamp the two pieces of MDF tight together. The twine pulled my wood strips tight against each other, while the hand screws kept everything flat. I usually had to scrape a little glue off the surfaces of my glue-ups once they came out of these clamps, as would be expected, but the boards came out of the clamps flat.

## Gluing up the ball blank

I made the ball blank about 12.5mm larger in diameter than the ball was to be. Discs of appropriate size were bandsawn from the glued-up plates. These discs were glued up to form a thicker piece, starting at the equator and working toward the poles. This was done in two halves – i.e. I was making two roughly hemispherical blanks. All discs were glued up between suitably sized pieces of 19.5mm MDF. MDF is very flat material. I used C-clamps at first and as the hemispherical blanks got thicker, and after a while, rapidly smaller towards the poles, I think I switched to weights of some sort. All else being equal, visible glue lines seem to result from inadequate pressure on the glue joint. There are very few visible glue lines in my ball; hopefully there will be none in the next one.

Something I did in making this ball, which I have not yet mentioned, but which was one of the central aspects of the project, was that I rotated each layer 5° relative to the layer below it when it was being glued into the blank. This caused the end grain to spiral up through the ball, producing a very interesting

visual effect when the finished ball was spun on a floor or table – see below.

To produce a uniform 5° twist between layers, I made a template about 255mm long, with an angle of 5° between the two long edges. I used sheet metal – cardboard would do fine.

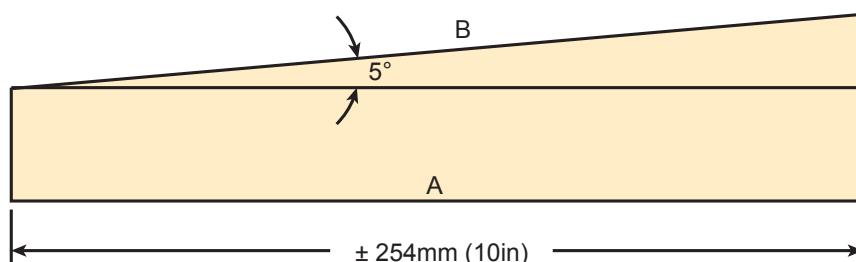
Before gluing a new layer to the one below it, I laid the template on the layer below, with edge 'A' lined up with the strips in that layer and then drew a pencil line along edge 'B'. After spreading glue on the top of the glue-up, I could still see this line through the glue and could orientate the axis of the strips in the new layer to this line as I set it in place for clamping.

Some thought was required regarding which way the angle needed to run in the two hemispheres, so that the twist would run continuously from pole to pole, rather than reversing at the equator.

There's nothing magic about using 5° for the twist between layers – it could just as well be 7 or 8°. I think increasing the amount of twist between layers too much would not look as good.

I added several extra layers of wood at the poles, to give me material by which to chuck the blank.

Eventually, I had two hemispherical glue-ups. I then glued the two halves together. I don't recall how I did so, but if I were doing it again now, I would make a gluing clamp by cutting out two 330mm diameter rings of plywood and drilling several equally spaced holes in each, on a pitch circle of about 290mm diameter, to take pieces of 12.5mm redi-rod, plus nuts and washers top and bottom. I would use two layers of 20mm plywood to make each of the two rings of my gluing clamp. Obviously, the inside diameter of the rings would need to be somewhat smaller than the maximum outside diameter of the ball blank.



## Working out the length of boards

I drew part of a circle that spanned just slightly more than a 90° arc. I then drew in two radii, at 90° to each other. I measured the radius of the arc and divided this by the intended radius of my ball, to get the scale of my drawing. I then used the drawing to find the size of the discs I needed for each layer of wood to go into the ball, adding 12.5mm to the diameter for a machining allowance.

I made this drawing on a piece of smooth

light coloured plywood, because I was going to be taking measurements directly off of it quite a few times over several days.

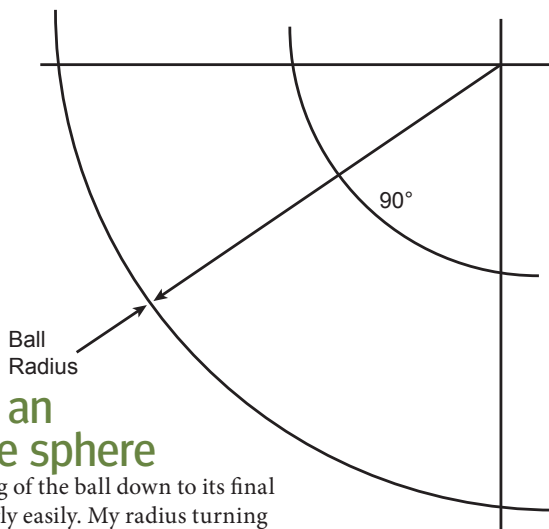
Knowing the drawing scale and the thickness of the wood in the layers of wood from which the ball blank was going to be glued up, it was an easy matter to draw in a series of lines parallel to one radius line on the drawing, to accurately represent the layers that would be in the ball blank.

I numbered the layers from '1' at the

equator to whatever number occurred for the final layer, as I produced them, so I knew where they were to go when I began to glue up the ball blank.

My drawing gave me a map that was very easy to follow in making the various layers for the ball. It can be thought of as both a plan view and an elevation view – not forgetting that the strips of wood will have different dimensions in the two directions, if made like mine.





## Making an accurate sphere

The machining of the ball down to its final form went fairly easily. My radius turning fixture (RTF) was built to put the die grinder at lathe centre height. By careful measuring and much swinging back and forth of the RTF, I positioned it on the lathe bed where I wanted it relative to my glued-up blank, and clamped it there. I then set the die grinder close to what seemed a good starting point and rotated the ball blank in the lathe by hand to make sure there would be no surprises. When everything looked OK, I advanced the die grinder about 1.6mm, and turned it on. I swung the RTF through its arc in small increments, while turning the ball blank by hand in the lathe. Eventually, most of the ball was roughed out, except for near the two poles.

## Then came the really tricky part...

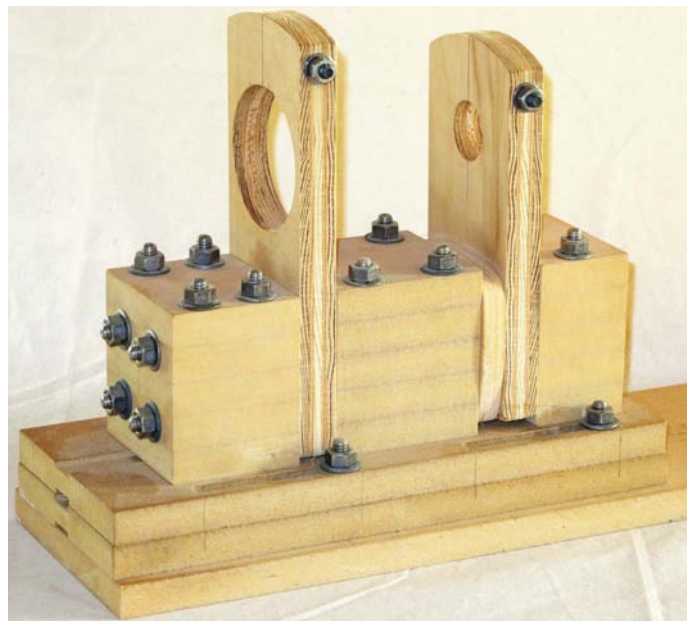
The RTF had to be moved to a new position along the lathe bed, because when the partially machined ball blank was re-chucked – in cup chucks, rather than between centres as used up to this point – with its new almost-finished spherical surface in the cup chucks, the centre of the ball blank moved towards the lathe headstock. The RTF had to be recentred carefully so that it was very – repeat, VERY – well centred with respect to the centre of the not-quite-finished ball. I knew how accurate a ball I would end up with would depend almost entirely on how well I did this recentring. It likely took me 20 or 30 minutes – it was not a two-minute job.

It was then a simple matter to machine away the two lumps that were at the poles of the sphere during the first chucking.

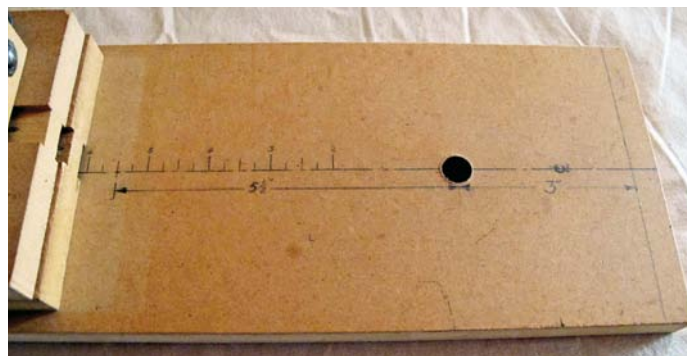
When I had all of the above finished, I began sanding the ball. This revealed a problem – white lines running around the ball like lines of longitude, and they did not come out with sanding. I realised they were caused by compression of the wood along the path taken by the exact centre of the rotating ball-nosed router bit. I therefore wetted the surface of the ball with water. When it dried, I sanded it some more, and the lines disappeared. *We might be able to work this thing in somewhere after all.*

When the ball was smooth enough, I gave it about three coats of Danish oil and it was done.

*“I knew how accurate a ball I would end up with would depend almost entirely on how well I did this recentring. It likely took me 20 or 30 minutes – certainly it was not a two-minute job”*



**Shop-made Radius Turning Fixture to position and pivot an electric die grinder at lathe centre height. A bull-nosed router bit removed the excess wood. The lathe was used only as a workholding device**



**A simple distance scale was drawn on the base of the Radius Turning Fixture. ‘Zero’ on this scale was at the RTF’s pivot point, which was carefully positioned on the lathe’s centreline**



**The two halves of the simple clamp the author devised to clamp the strips that went into the ball so that they could be glued up into flat boards. The boards became layers in the ball**





## It isn't perfect

The ball has some slight imperfections in it. There are some places where the router bit ripped small bits of wood straight up out of the ball, leaving little pock marks. I don't know how one could avoid this – it may be due to grain direction, which you can't do much about. Such flaws could be filled with wood filler or epoxy of some bright colour, such as red or blue, thus making a feature out of them. Douglas fir is a relatively soft wood and it doesn't take much of an impact to put a ding in it. Somebody poked at the ball with the metal tip of his umbrella at a woodworking show. I told him pretty curtly to cut it out and he asked me why. I said, "Because it took me a month to make it! At that point he stopped asking stupid questions.

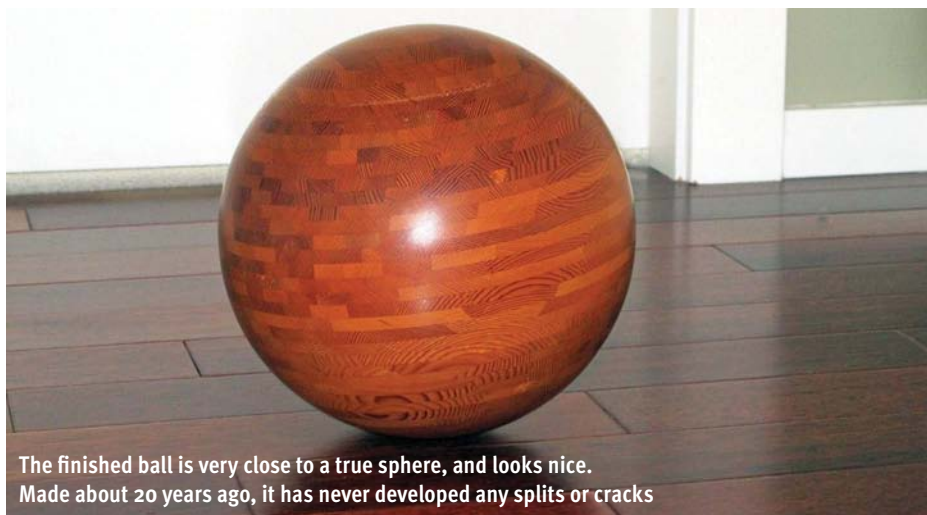
## Going back to the 5° twist...

The end grain spiralled up through the ball, just as I had planned. When I set it on either pole, on a smooth wood or carpeted floor, and gave it a spin, the darker end grain and the lighter side grain caused a waving dark/light highlight to race up and down the spinning ball.

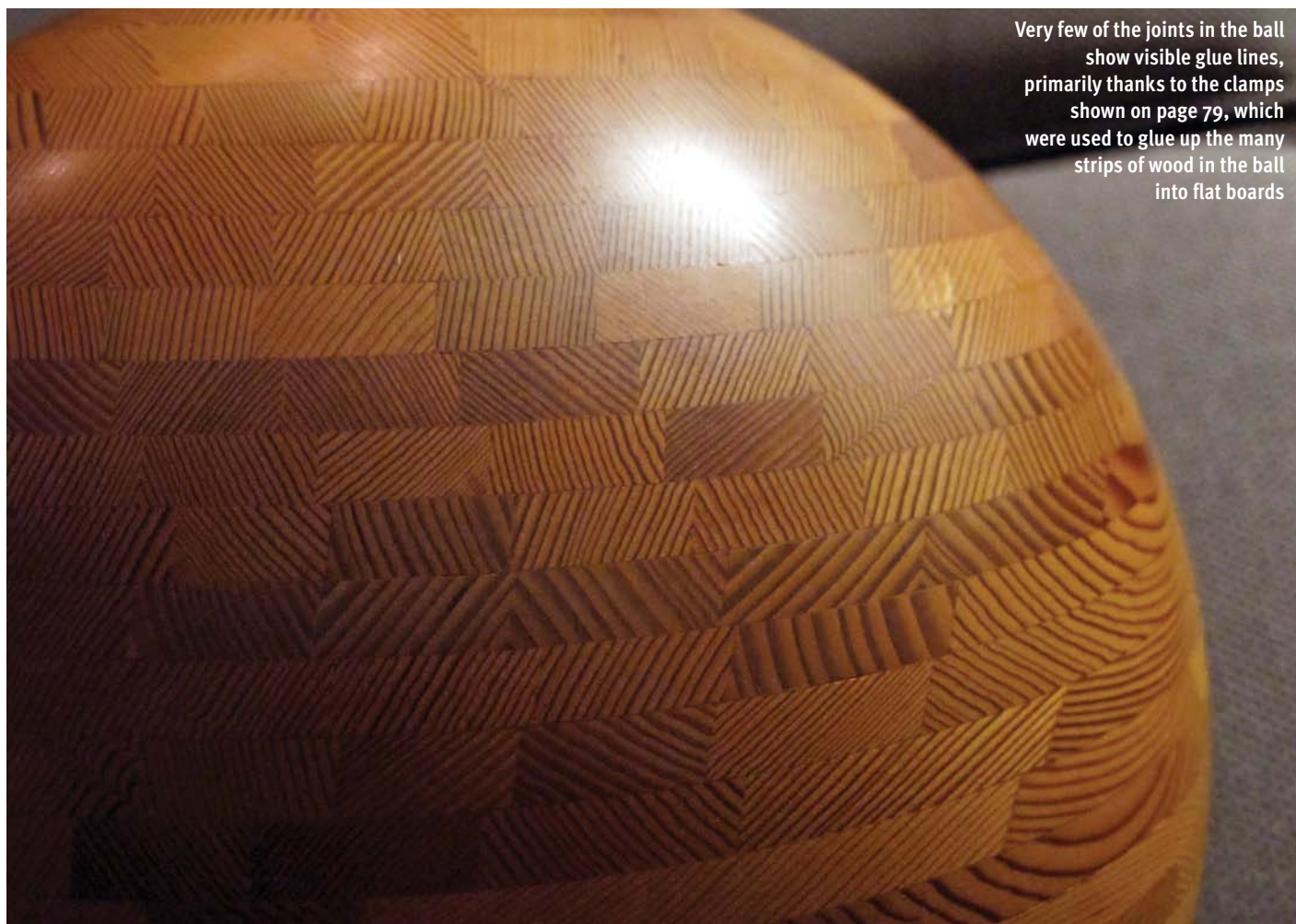
## Now here's the most interesting part of all

I have put this ball on display at various woodworking shows and similar over the years since I made it, and I have noticed something that happens *every single time*: men take one glance at this rather nice smooth ball, and they immediately move on to the next thing to see. It is invariably women who will stop and look at the ball and ask: 'Is it hollow? How did you make it? Can I hold it? Oh – it's so heavy! And it's so smooth!' They want to rub and fondle it

like it was some little furry animal. Women like it! And why is this interesting or worth mentioning? Well, if you were to make such a ball with drawers in it – whether it was a 100mm ball with one drawer, or a 305mm ball with five drawers – it could be used as a jewellery box! And who wants a jewellery box? Yes, women! And women like this here wooden ball. All you need to do is figure out how to make one with drawers in it. (Yes, I have figured out how to do it.) ●



The finished ball is very close to a true sphere, and looks nice. Made about 20 years ago, it has never developed any splits or cracks



Very few of the joints in the ball show visible glue lines, primarily thanks to the clamps shown on page 79, which were used to glue up the many strips of wood in the ball into flat boards



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# Less common timbers – part 2

Continuing with his less common timbers theme, **Dave Bates** looks at silver birch, horse chestnut and London plane

PHOTOGRAPHS BY DAVE BATES

Birch (*Betula pendula*) burr, finished with oil and paste wax



## DAVE BATES



Dave started turning when he was about nine years old but didn't start taking it seriously until he saw three bark edge bowls by Bert Marsh in the early '80s. From a background in horticulture and then tree felling, he took up arable farming in 1979, and in 1987 following the Great Storm, set out to acquire a few trees for his hobby. Dave, along with his wife and son, runs Stiles & Bates and is also on the Register of Professional turners (RPT).

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Silver birch (*Betula pendula*), london plane (*Platanus acerifolia*) and horse chestnut (*Castanea sativa*) are three trees that are probably best described as hedgerow or parkland trees, which we can make use of when the timber comes our way.



## Silver birch



Silver birch (*Betula pendula*) planks air drying

There are numerous varieties of birch, some used for making the best plywood and others for paper pulp, but the most common in the UK is silver birch (*Betula pendula*), which only rarely grows large enough for milling. Larger trees often have a hollow centre or pipe rot but the sound trees can yield nice planks. The timber is generally quite a plain white colour and straight-grained, but ripple and swirling grain is not uncommon and the pith of old trees are

often streaked deep yellow, brown and even red.

Like most pale timbers, milling soon after winter felling is important to preserve the colour and strength of the timber. Interestingly, birch has almost the tensile strength of ash but is much lighter in weight, hence its use as ply in the old Mosquito aircraft.

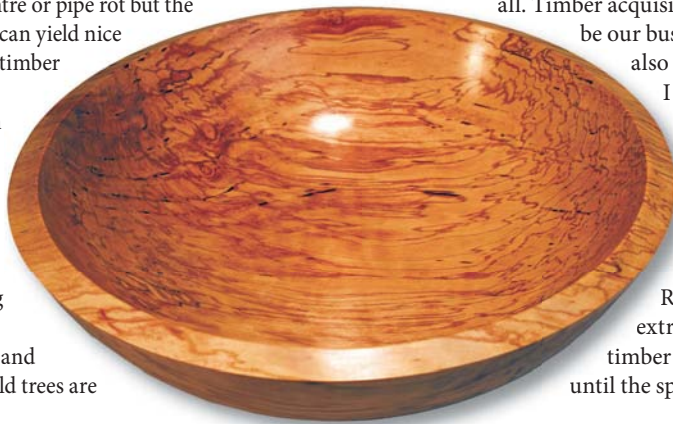
Birch is not a durable timber so will rot quickly if not milled promptly. Dramatic spalt lines can appear in just six months but by then, the timber is usually too pecky to turn easily. Prior to this, however, the timber takes on a marbled effect, which can make some nice pieces.

It would be nice to claim that the piece I used in the pictured bowl was deliberately milled just at this stage, but the truth is, I had no plans to buy the tree but as is often the case when I buy from clearance felling, I buy them all. Timber acquisition might

be our business but it is also a compulsion

I have, almost a disease! It is how I got into this business in the first place.

Rain halted extraction of the timber so it was not until the spring that the



Birch bowl with marbled effect as the timber had gone off before milling, 250mm diameter



Balancing a burr lump between centres. The burr was about 250mm long x 225mm. Plan B was a light pull!



I prefer to get a chuck grip on as soon as possible in case the drive fails



Outside shaping is done in stages as the hollowing progresses



With the inner branch hollowed away, at 6mm wall thickness, the piece was just burr and ingrown bark and looking likely to become shrapnel, so I tightly wrapped the top with polythene film. It is important to wrap against the direction of rotation or it will immediately begin to unwrap

machines could get back into the woods and by the time we milled it, the marbling effect was already showing.

Burr growths are not uncommon on birch and very often they are found right out on the branches, hanging like fruits. The one shown here was growing on a 75mm diameter branch and at an overall size of around 230mm, was unusually large and tight.

### TURNING CHARACTERISTICS

- Birch turns quite soft and easily. Areas of ripple and swirly grain can fluff up unless cut with care, but the timber does not take the edge of the tools quickly
- When 'off' slightly as the marbled bowl was, it is like any other timber on the way to being recycled by nature – fine, fine cuts and careful shear scraping are the way to a good finish
- Dried well, birch is one of the few timbers that can be turned as branchwood with only a small risk of splitting

### FINISHING

- Again, birch cuts well with abrasives and works to a good finish
- Sound birch with ripple or swirl grain has an almost translucent depth, which can be accentuated with high shine products
- The more pecky pieces will soak finishing products up like a sponge, so on this piece, I diluted a hard wax oil for the first coat

## London plane

Usually named according to the country of origin – English plane, French plane, etc. – planes have been planted in towns all over the world due to their high tolerance of pollution and cramped root space.

The London plane or maple-leaved plane – hence *acerifolia* – is apparently a cross between *Platanus orientalis* – native to Greece and Turkey – and *Platanus occidentalis* – known in the US as buttonwood (*Conocarpus erectus*) or sycamore (*Acer pseudoplatanus*) – and this hybrid is thus given the synonym *Platanus hispanica*. All very confusing and enough Latin for one day, surely.

Plane timber varies from pink through to shades of brown to pale straw colour and quartersawn to show the spectacular flecks of the medullary rays, known as lacewood.

In simple terms – the only way I know to understand botany and timber – I visualise these rays as very thin columns of ply radiating out from the centre or pith of the tree. Look at almost any log as it dries and you will see cracks radiating from the pith as the timber separates down these rays.

If you were to cleave or saw a log into quarters through these splits, the rays would show clearly on each flat face.



Do the same again to each quarter and again they will show. This is an entirely impractical way to convert timber so quarter sawing to yield lacewood is done by holding and sawing the log as close as it is possible to make cuts parallel to the medullary rays.

It is the same when turning this timber – any cuts made parallel with the rays will show the flecks clearly; cuts at an angle will show them in angled section and cuts at 90° render them almost invisible.

Burrs are not uncommon in plane. In any heavily burred log, to show the ends of the burrs as the pippy knot clusters that they are,

a log is usually cut flat, rolled through 90°, cut again, rolled and so on until the log ends up as a square beam.

You cannot flat cut and cut on the quarter but for my money, quartersawn plane is the most attractive and so most cuts on a burry log will show the sides of burrs.

Plane logs do not commonly appear on the timber market as they are usually town planted trees and regularly pruned to reduce the risk of being wind blown.

Not so many years back, trees felled in London were avoided or treated with caution due to shrapnel inclusions dating back to the

Blitz but equally, long grown in metal fencing are still being found in the most ancient trees when efforts are made to fell them.

## TURNING CHARACTERISTICS

- Plane is a slightly soft timber, similar to say, sycamore, and not as hard as beech (*Fagus sylvatica*)
- Cuts made parallel to the rays are liable to lift them from the wood unless fine cuts are made with freshly sharpened tools Referring to the rays again as thin ply – and the botanists will kill me for this – I visualise them as not so well glued into the timber as they are with other timbers. Get it wrong and you can hear a soft chattering sound as they lift out. It is for this reason that cabinetmakers use a low angle plane in lacewood

## FINISHING

- So long as you have cut the rays well and maybe shear scraped for the final cuts, the timber is easy to work to a good finish
- Abrasives will easily remove the wood so take care to preserve fine detail, such as beads and quirks
- Plane is a very absorbent timber so will readily accept oils or sealers greedily
- As with most timber, Danish oil will darken it more quickly but cellulose or acrylic-based products will preserve the light colour for longer



One of two burr planes. The first was clear and hollow; this one is embedded with wire but the work of removing it with chisel, saw and maybe an Arbortech should be worth it

Birch bowl showing lacewood flecks where the cut is parallel to the medullary rays. Petering off as the cut ends up almost at 90° to the rays

## Horse chestnut

In full leaf and flower in May, the horse chestnut is surely our most attractive specimen tree. Later, the fruits set and fall as conkers. These 'nuts' have been used in medicine, erroneously, in the past to cure horses of coughing and with no apparent effect on repelling spiders – I tried them in my workshop – but mainly, as fun for the game of conkers when we were kids.



Horse chestnut bark with visible small patches of burr. The pinkish damage mark on the bark is where a squirrel regularly scampers



Coloured horse chestnut (*Castanea sativa*) burr

I have always thought that the subtle gloss on a fresh conker is the exact finish I would like to achieve on all my turnings. As timber, however, although some sources list it as being used for brush backs, turnery, mould patterns and racquet handles, in over 40 years, I have never heard of it being milled commercially except for its fine burrs.

Horse chestnut is a tree prone to attack by horse chestnut scale, leaf miner, leaf blotch and more seriously, bleeding canker – a disease that has now affected half of the UK's trees. To reduce its spread, felling is taking place all over the country and I have included it here because we are offered logs frequently but always decline, unless they are heavily burred!

As a timber, it is only slightly more durable than a cardboard box and will rot very quickly. Even milled into sections over 100mm being soft and porous, it can start to decompose in months. If you acquire any burrs, keep them dry under cover and turn them as soon as you can, or at least part turn them for drying on and finishing later. ●

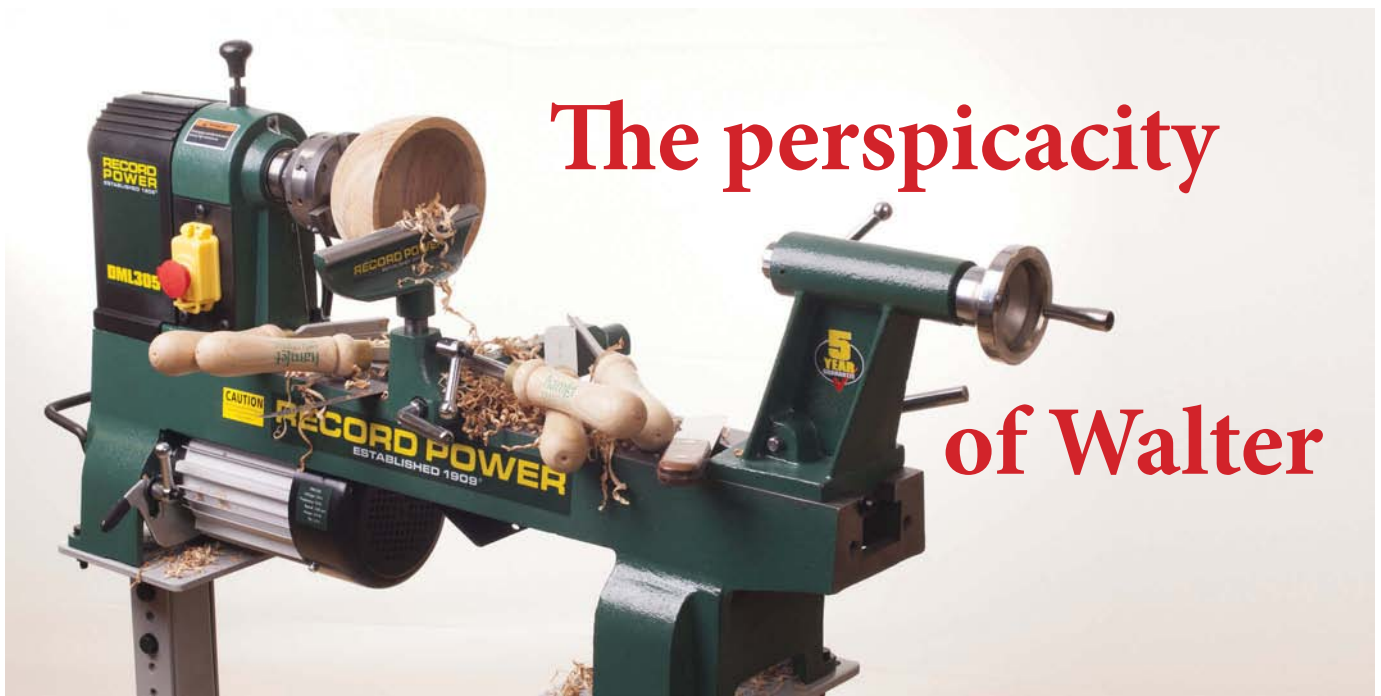
## TURNING CHARACTERISTICS

- Plain horse chestnut turns soft and fluffs up too easily for me to get enthusiastic about, but the burrs, being a cluster of knots, have a much tighter texture so can turn up really well

## FINISHING

- I would prefer to sand with a hand block rather than risk a power sander eating into soft areas between burrs and creating an undulating surface. Start with a coarse grit to remove fibrous strands
- Being soft and absorbent, the timber accepts stains readily and I think the colours applied by Robert Chapman in the pictured vessel are among the best use of colour on turnings I have seen





# The perspicacity of Walter

## *If I were going to say things about these tools, I'd say things like:*

'... when these new Compac tools arrived for testing, I was not expecting to be impressed. I was wrong.'

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### *I might well conclude:*

'These are well-designed and robust tools made from exellent quality materials. They will make an excellent partnership with any of the smaller lathes and fill an imporant niche gap in the market'

In fact, all of these things were said, not by me, but by Walter Hall when he reviewed the Compactool set for Woodturning in Issue 276.

We find ourselves agreeing wholeheartedly with Walter, but then we did design these tools and they are unique to The ToolPost. So, naturally, we're proud of them - and of the great success they have been, helping many turners become better turners. But it's certainly nice to have truly independent corroboration of our views from such a well-respected, experienced and knowledgeable turner as Walter Hall. We take our hats off to this very insightful gentleman.

A typical small lathe has just 6 inches of space between spindle and bed. A typical bowl gouge is 23 inches long. You can't fit that into a six-inch space and present it to the workpiece correctly. The new CompacTool bowl gouge measures just 10½ inches overall so it isn't hard to understand why that fits so much better into the available space is it?

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# Hourglass variations

**Philip Greenwood** discusses templates needed for turning an hourglass and shows you how to make a version using contrasting timbers

## PHILIP GREENWOOD



Philip has been turning wood since 1980 and started turning professionally in 1986. He was accepted onto the Register of Professional Turners (RPT) in 2006. He is also a member of the AWGB.

He can be seen working in his workshop in North Yorkshire and has demonstrated at the woodworking show at Harrogate since 2008. He runs courses at his workshop.

[philip@woodturningintoart.co.uk](mailto:philip@woodturningintoart.co.uk)  
[www.woodturningintoart.co.uk](http://www.woodturningintoart.co.uk)

In this article you will need to make several items alike, so it will be good practice for copy turning.

An hourglass is more of a decorative item but it can provide entertainment in timing it to see if it is an hour in both directions – yes, it can vary slightly. You will have 10 parts to make for this design: two ends, two centre pieces for the hourglass ends to sit in, three spindles and six spindle end caps. Alternatively, it could be made in five parts for a simpler design by only drilling partway through the ends to locate the spindles, which means you have no end caps to make by missing out the two centre pieces. The centre pieces are made from a contrasting timber but you could use all the same timber throughout if you prefer.

Hourglasses can come in several sizes, depending on the supplier you buy from, or you could buy an egg timer kit instead and scale it down. This is glued together so if it gets broken, it will need several new parts turned. One option is to use mirror screws. These types of screws have a cap that covers the screw head, which is normally silver coloured. To use this type, only drill partway through the ends to locate the spindle spigot in 8mm and a small 4mm hole all the way through, then you could use mirror screws to hold the end onto the spindles. I sit the hourglass ends on a piece of silicon sealant to stop it rattling in the ends. Remember that this is glass so check the fit before you start gluing the parts together. My hourglass was made from ash (*Fraxinus excelsior*) and walnut (*Juglans regia*) for the two centre pieces and was finished using wax.



PHOTOGRAPHS BY WENDY GREENWOOD



# PLANS

## EQUIPMENT USED

10mm bowl gouge  
25mm French-curve scraper  
3mm parting tool  
20mm skew chisel  
20mm spindle roughing gouge  
10mm spindle gouge with a fingernail profile  
Cellulose sanding sealant  
Cloth  
Nylon pad or '0000' steel wool  
Three-part buffing system  
Bradawl  
Drill  
Variety of abrasives  
8mm drill bit  
PPE: latex gloves, facemask, respirator/dust mask and extraction

## MATERIALS USED

Ash (*Fraxinus excelsior*) and walnut (*Juglans regia*):

**Ash:** 210 × 40mm thick – two off ends

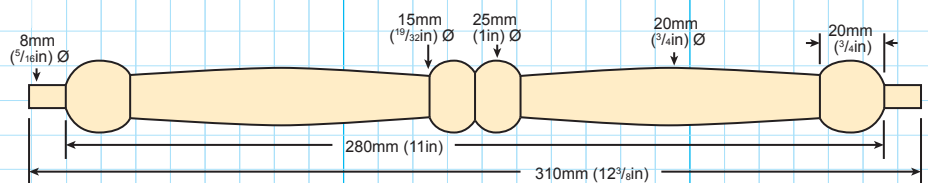
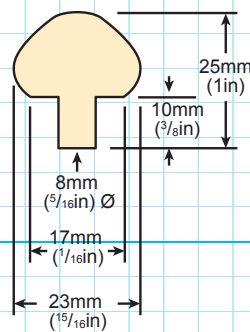
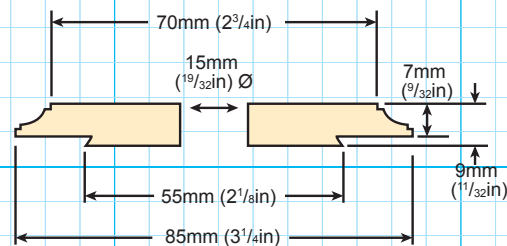
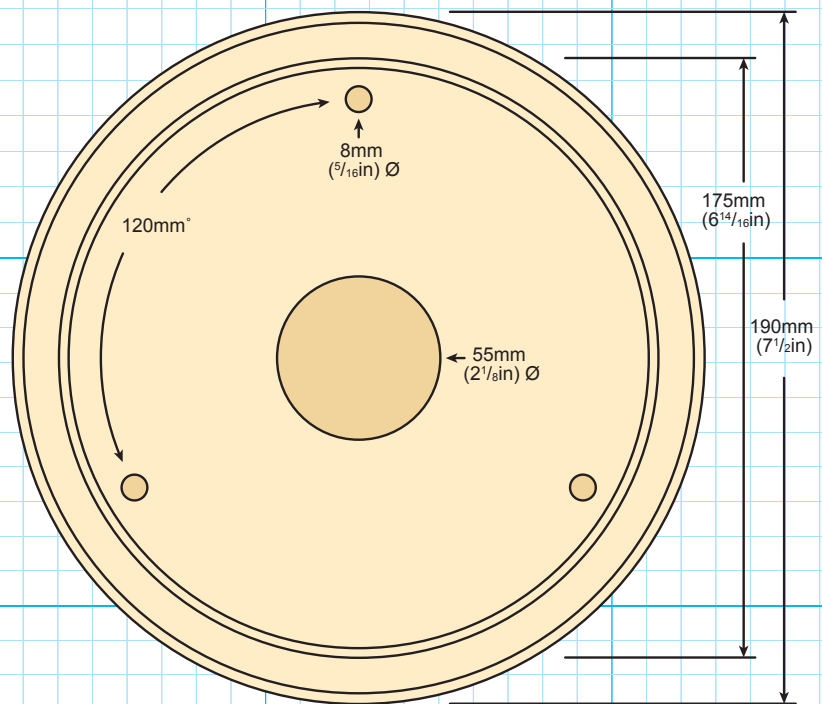
**Walnut:** 90 × 15mm thick – two off centres

**Ash:** 320 × 30mm long – three off spindles

**Ash:** 40 × 30mm long – six off end caps

## SPINDLE TEMPLATE

Here is a template for the spindles, which will allow all the spindles to be the same. You can start by drawing the spindle shape out on to this or if you have turned a spindle first, transfer the entire dimension onto this. Like the overall length, the spigot length and all the details, you can also mark the diameter for each piece as well. This could be cut out to shape so you can offer this up to the spindle to check the shape, but I am using this as a pure marking-out stick. The template is cut longer than the spindle by 50mm. To use the template, just hold it against the spindle and transfer the marks onto the spindle with a pencil. This can be done while the lathe is running, providing that the spindle is totally round. Write the item name on this template





## DIVIDING THE PITCH CIRCLE DIAMETER

On the inside of the ends you need to mark where to drill the holes for the spindles. If you have an indexing facility on your lathe, lock the spindle in position 8, then attach the disc with the grain running vertical to the chuck. This will assist in making sure that the grain direction on both the top and bottom is running in the same direction. The first step is to mark the diameter that the spindles will sit on; this is called a PCD, which stands for Pitch Circle Diameter. My PCD is 160mm, so I will place

a mark 80mm from the centre, draw a full circle lightly so this can be sanded away when you have finished. Lock the spindle in position 8 with the toolrest on centre height, mark a line and then repeat on positions 16 and finally 24. If your lathe does not have an indexing facility, use a pair of dividers. First, set the distance from the centre to the PCD, then place both legs on the PCD, swing the first leg round onto the PCD and mark. Continue this process until you have three equally spaced marks



**1** Start by marking the centre of both ends. Here I am using a large plastic jig with concentric circles to find the centre of the blank, then use a bradawl to mark. This will become the inner faces of the frame so choose the best grain pattern for the outside



**2** The next job is to drill a hole slightly wider than the chuck jaws; this will enable the jaws to expand into this hole. When drilling with this size of drill bit, clamp the disc to the table as there is a risk of the bit grabbing and spinning the disc



**3** True up the outside of the disc with a bowl gouge; this disc is larger than you need but you can remove the excess very quickly with the gouge. Leave this 5mm oversize on the diameter; this can be cleaned up later



*“The next job is to drill a hole slightly wider than the chuck jaws...”*

**4** Use a pull cut to remove the run out – these discs do sometimes vary in thickness over the width or have warped, which can cause vibration. This operation will remove the vibration and allow you to see what the surface is like as well



**5** This side will become the outer face of the hourglass so you need to add a spigot to hold on to, which will allow you to complete the inside face. Use a parting tool to cut down the side of the spigot, then remove the waste from here to the outside with the bowl gouge. Next, use the skew chisel to add the dovetail to the spigot



**6** Lock the spindle in the number 8 position, then mount the spigot in the chuck with the grain going vertically. Do this for both end pieces so the grain direction will match when you assemble the frame. Remove the spindle lock, clean the top face to thickness, then true up the outside to the correct diameter







**7** Cut a recess with the parting tool – mine was 58mm diameter. This will enable you to finish the top later and also to fit the centre part of the frame as well. Clean the centre part out and dovetail the side with the skew chisel

**8** Here you can see the completed centre. The circle is marked where the spindles will sit, which has been divided into three equally spaced sections using 8, 16 and 24 on the indexing facility. Mark the three points with a bradawl as the pencil lines will be removed when sanding



**9** Add a small cove on the edge with a bowl gouge, then define the cove with the long point of the skew chisel. Use the skew chisel laid flat on the toolrest with the tool horizontal – do this slowly to avoid any grain tear-out. Sand this through the abrasive grits up to 400

**10** Hold the disc in the chuck recess and remove the spigot, also reducing the thickness as needed. Repeat the detail as before. Sand through all the abrasive grits up to 400

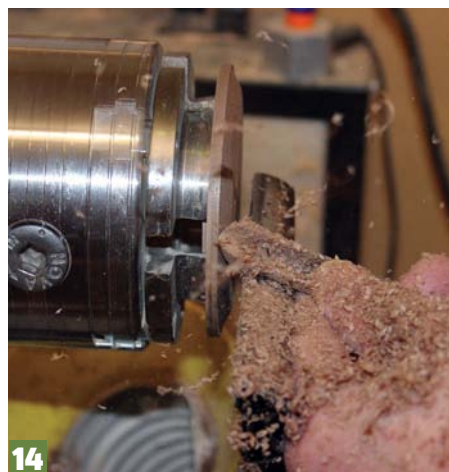
**11** Next, use a piece of scrap wood on the drill table and place a piece of anti-slip mat on this, which will prevent you marking the finished piece. Drill with an 8mm drill bit, then seal the surface of the timber – this will be buffed up later



**12** Mount a piece of walnut on a screw chuck – here you can see I have placed a packing piece so the screw does not interfere when turning the front face of the disc. True up the outside of the disc followed by the face

**13** Mark the spigot diameter that will fit in the recess of the ends that you made in step 7. The spigot needs to be just deep enough to hold on the chuck jaws. These parts require no sanding as they will be glued to the ends

**14** Here you can see this gripped in the chuck jaws. Turn to the diameter and thickness needed with the bowl gouge. To place a concave edge on this piece, use the long point of the skew chisel to place some detail at both ends of the cove



### HANDY HINTS

1. Measure the hourglass carefully for the diameter, the length of the glass without the metal end caps and the total length. Make the spindle length to fit and don't forget the contrasting centre pieces on the ends of the frame when working out the spindle length
2. Remove any wax on the glue joints or they will not hold
3. Wear safety glasses and a dust mask at all times when you are in the workshop



**15** Use a parting tool to make the centre hole larger – this needs to fit the metal plug on the end of the hourglass. Sand through all the abrasive grits, then apply sanding sealant

**16** Mount a spindle piece and turn to a little over the finished diameter. With the lathe switched off, lay the template on the toolrest, line up with the right end and use a pencil to transfer the lines onto the spindle. The 280mm line is the distance that the spindles must be for the frame to fit together properly

**17** Use the parting tool to part down to the correct diameter for each component on the main spindle, then turn the beads. Complete the detail at the tailstock end first

**18** Use the skew chisel to cut the centre parts. Next, move onto the centre beads before completing the left end of the spindle. Turn the spigots on the ends to 8mm. Sand up to 400 grit, then apply sanding sealant, except on the end spigots. At the drive centre end, cut off the waste with a fine-tooth saw

**19** Turn a piece of ash to a cylinder using a small template to mark the total length, which includes marks for the spigot length and the domed part. Sand and seal, then part off

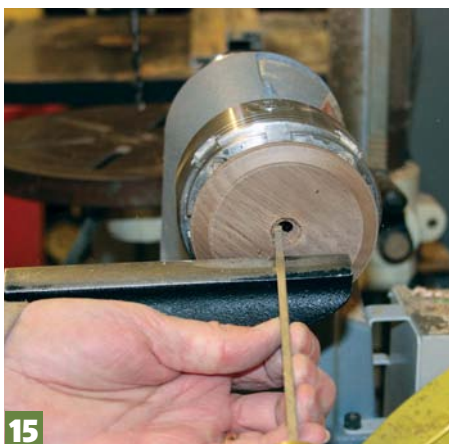
**20** Use the buffing system on all the components but try not to get wax on the spigots. When buffing, hold the work to the wheel at the lower portion

**21** Glue the centre pieces into the ends and line the grain up. Glue the three spindles into one end and add a small amount of silicon sealant into the centre piece. Add the hourglass pack with cloth to hold the glass vertically, then the end piece. Let this set and add the feet

**22** Your finished hourglass should look something like this ●

## FINISHING

For this project, I chose to wax the timber. Start by applying a cellulose sanding sealant on all the parts; this can be applied by cloth or brush but always read the manufacturer's instructions. Once dry, denib with a nylon pad or '0000' steel wool, remove the dust and repeat if needed. More than one coat will be needed on more porous timbers. Then use a three-part buffing system but try not to buff any parts that will have glue on them. The first mop is loaded with tripoli and all the parts are buffed to remove any sealant marks. Then, the second mop is loaded with white diamond and buffed again. Once you have a smooth surface, move onto the Carnauba wax





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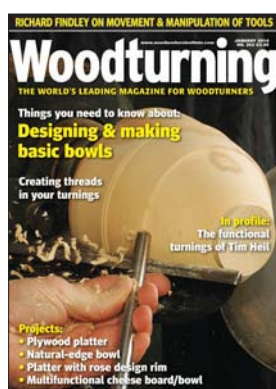
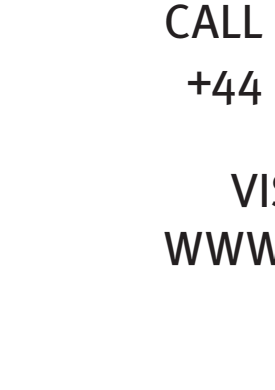
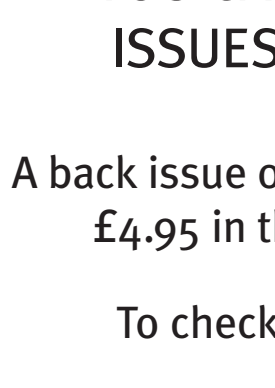
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# Kit & Tools

A mixture of tests and press releases showing the latest tools and products on the market

All prices are correct at time of going to press. Products from USA & overseas to UK are subject to shipping & taxes

## THE TOOLPOST EXTENDS RANGE OF CARTER TOOLWORKS M42 TOOLS

Following their very successful introduction to the UK/ Irish market, through The ToolPost, the range of M42 woodturning tools from Carter Toolworks has been extended.

M42 is a high alloy steel offering high durability and excellent edge-holding properties, normally reserved to aerospace and other arduous industrial applications. These properties combine to enable the creation of woodturning tools

that not only take the keenest edge but which hold that edge for an almost unbelievable length of time. Now, this range has been extended, broadening the range of tools to include a spindle roughing gouge, scrapers, parting tool and skew chisels.

The spindle roughing gouge is 20mm wide and is available equipped with either a comfortable 405mm long aluminium handle or as a blade only.

The new scrapers are machined

from 25mm diameter steel to create tools with 25mm wide blades, 10mm thick and incorporating 20mm diameter tangs for insertion into the handle. The tools are available either with 405mm long aluminium handles or as unhandled blades.

The diamond section parting tool is 1.5mm wide at the cutting edge and supplied either with a 405mm aluminium handle or unhandled, ready to fit a 12mm bore handle.

The new releases are rounded out with a couple of skew chisels that cover the favoured ranges from a neat and handy 12mm version with rolled edges and a curved cutting edge to a 25mm wide, 10mm-thick bladed version that features

a fully radiused cutting edge for versatility in use, as well as rolled edges to avoid snagging on any toolrest imperfections. Both tools are manufactured by machining from solid bar billets for precision and strength and are available either handled with 405mm aluminium handles, or unhandled as 'blade only'.

These tools will very quickly assert themselves as the 'must-have' tools of the woodturning market and are very worthy additions to the Carter & Son Toolworks line-up of high quality M42 turning tools for the knowledgeable craftsman. See the website for price details.

**Contact:** The ToolPost

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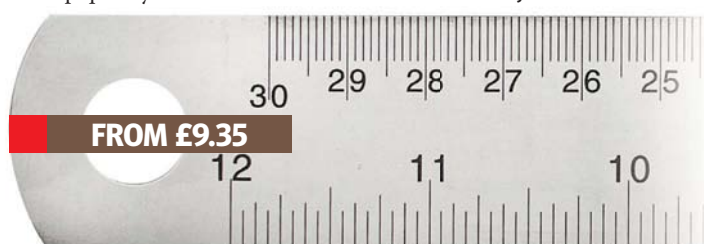
This stainless steel ruler, available from Buy Brand Tools, is made to EC Class II accuracy and is designed so it can be read from right to left. It is graduated on the top edge in 0.5mm and 1mm and figured in cm. It is also graduated on the bottom edge in 16ths, 32nds and 64ths, figured in inches. This single sided ruler is made in Germany by Vogel – one of the world's leading manufacturers of top quality stainless steel

rulers. This product is made from stainless steel – grade 4310 – with a satin finish and is available in a number of different lengths: 300mm/12in, 1m/39in, 1.5m/59in, 2m/79in, 3m/118in and 4m/158in. 1.5m and 2m rulers are also available with 40mm width and 2mm thickness.

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Dremel has recently introduced a raft of new and improved initiatives to help its users power on with their projects in 2015. The Dremel 8200-20 cordless multi-tool has enhanced runtime and faster charging, allowing the user to perform heavier duty applications. The tool now contains a compact and powerful 2.0Ah 10.8V Li-ion battery, a high power 36mm electric motor to ensure ease of cutting, a slide speed switch providing full variable speed control up to 30,000rpm, a motor brake to ensure that the accessory on the tool stops spinning immediately after switching off the tool for extra safety, a three LED battery gauge to show accurate battery status, a separate on/off switch with collet lock-out function to ensure no accidental actuation of the collet lock, EZ Twist to change accessories without

a wrench and a soft grip, which makes the tool feel comfortable to use. There is also a new range of accessory sets, including the new seven-piece Dremel DSM20 Compact Saw Accessory Cutting Set, a new seven-piece Multipurpose Router Bit Set and three new Multipurpose and EZ SpeedClic accessory sets.

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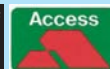
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# John Hodgson – 'Oak Wood Renaissance'

**John Hodgson** rescued this piece of weather worn oak from the scrap pile and turned it into something spectacular

PHOTOGRAPH BY JOHN HODGSON



'Oak Wood Renaissance', oak (*Quercus robur*) 430mm long × 250mm wide × 150mm high

I recently retired from professional woodturning, producing work that was tailored to meet the requirements of various galleries, in a style that was readily identified as my own, but also compatible with the high standard of artwork attributed to those galleries. The other main consideration was of course a product that would sell at an attractive price without compromising my work ethic. With that constraint now out of the way, I can indulge myself in turning spontaneous pieces for my own pleasure. This piece definitely falls into that category. Recently, while stoking up the woodburning stove, this awkward-shaped

bit of old wood caught my eye and I recognised there just might be an interesting piece lurking beneath the scuffed surface. I reckoned it was worth a try, but if it didn't work out, there would be something left to feed the stove.

This bowl has been made from such a piece of old oak left over from a sculpture I made a couple of years ago. It originally came from the bottom of the trunk where it rises from the root plate. The base of the bowl would have been facing what would have been the centre of the tree and the top surface of the bowl would have been the side where the bark had rotted away, leaving the fissures gouged

deep into the heartwood. It was these fissures that I wanted to retain in the turning as a reference to the tree, allowing the part played by nature to form an integral part of the completed work. As I turned I encountered several splits and bark intrusions, which required a few copper staples to hold the whole piece together before I could turn the bowl centre. The black areas have been scorched and stained and the whole piece hot wax polished. ●

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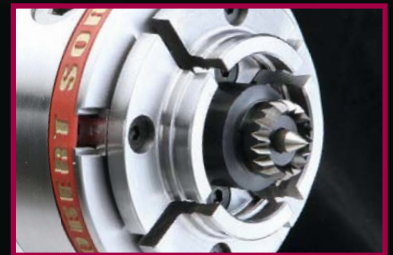
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